JANUARY 17, 1955 NEWS ISSUE

Electrical World

Price 35 Cents

A McGRAW-HILL PUBLICATION

400-Amp Service Makes Alabama Home...

Model for All-Electric Home of Tomorrow

... Page 15

Paper Cuts 40-kv Cable Job Costs ... Page 48

Simplifying Utility Stores Accounting ... Page 45

E S POWER GS W L
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

RESIDENTIAL LOAD GROWTH, typified by the G-E Wonder Home of 1964, Eliot Noyes, Architect,—according to H. E. Campbell, G-E Distribution Engineer (left), and Bruce Gravitt, Meter Department—will require extended-range watthour meters such as G.E.'s new I-55.

Increasing residential loads demand new meter

"All-electric living" brings watthour meters with straight-line accuracy to 100 amperes

Anticipation of future residential loads, expected to double in ten years, has brought about the need for watthour meters with extended range. General Electric has answered this problem with the new I-55 meter. Designed to handle the load of the all-electric home of today and the future, the new meter features straight-line accuracy to 100 amps.

DEVELOPMENT OF GROWING TREND

Because of the rapidly increasing use of major appliances and electrical conveniences, it is expected that residential load will exceed large light and power consumption in the future. Even today, on many utility systems, and in some areas of most systems, consumption in individual homes is running far above the national average, requiring increased metering now.

MEMBER OF THE I-50 FAMILY

General Electric's new I-55 meter, designed to meet a promising electrical future, incorporates all of the quality features of the original I-50 meter, including elimination of bearing wear through magnetic suspension; well proven by the more than five million I-50's in service today. And, factory certification of the I-55 will continue as part of G.E.'s efforts to reduce utilities' meter testing costs.

This new watthour meter as well as recent improvements in distribution transformers, fuse cutouts and other distribution equipment is further evidence of General Electric's determination to aid the electric utility industry in best serving its customers. For further information on the I-55 meter, contact your G-E Apparatus Sales representative, or write General Electric Co., Section 301-288, Schenectady 5, N. Y.

MORE POWER TO AMERICA

GENERAL ELECTRIC

Electrical World

Vol 143 No 3 January 17, 1955

EDITORIALS—Pertinent comment on the industry's problems and accomplishments 5

THE ELECTRICAL WEEK—Last minute news briefly told 6

NEWS—Complete coverage of activities affecting the industry 8

FEATURES:

TOMORROW'S ALL-ELECTRIC HOUSE IS HERE TODAY 15

PRE-PRINTED FORMS SIMPLIFY STORES ACCOUNTING 25

NORTH AMERICAN CO BECOMES UNION ELECTRIC CO 30

PEPCO CUTS 40-KV CABLE JOB COSTS ..... J. P. Moran and A. C. Laird 46

NEWS ABOUT PEOPLE—Personnel changes throughout the industry 36

MANUFACTURERS & MARKETS—Information on electrical manufacturers and today's markets 55

SALES AND SERVICE—Commercial, rural, and residential uses of electricity 59

FINANCE & REGULATION—Securities and financing news 63

STATISTICS—The industry's progress in figures 66

Meetings Calendar 43
Industrial Relations 51
Technical Notes 62
Electrical Business Outlook 60
In the Industry 62

COMING NEXT WEEK—*51st Annual Statistical Issue. This special compilation of data from all power suppliers in the United States as well as from numerous other sources will be the first complete picture of the state and progress of the electric industry in 1954.*

Published for 81 years for those engaged in the business of generating, transmitting, distributing, or applying electric power

FISCHER BLACK, Publisher and Editor
JESSE MOCK ..... Asst to the Editor

DANIEL T BRAYMER ..... Managing Editor
LEONARD M OLMSTED ..... Associate Editor
KENNETH K KOST ..... Associate Editor
HERBERT R FRANKEL ..... Associate Editor
RUE M SHOOP ..... Associate Editor
GEORGE SWIFT ..... Associate Editor
V CRAIG RICHTER ..... Associate Editor
EDWARD ALLEN ..... Midwestern Editor
HOWARD S KNOWLTON ..... New England Editor
JOHN J KEARNEY ..... Middle Eastern Editor
FRANCIS KOVALCIK ..... Western Editor
DAVID REA ..... Northeastern Editor
JEANNE BERNHARDT ..... News Editor
IRIS ST. CLAIR ..... Departmental Editor
E BRYSON SESSIONS ..... Assistant Editor
ALLEN LONG ..... Assistant Editor
ARY MOSSIMAN ..... Manager of Market Research
JOAN STEEN ..... Statistician
W J WALLACE, JR ..... Art Director
DENISE HENNESSY ..... Production Editor
G B BRYANT, JR ..... Mgr. Washington Bureau
W. GILMOUR ..... Washington Correspondent
DEXTER M KEEZER ..... Dir Economics Dept
RICHARD W EVERETT ..... Economics Dept
A E KNOWLTON ..... Consulting Editor

DOMESTIC NEWS SERVICE: Atlanta, Chicago, Cleveland, Detroit, Houston, San Francisco.

WORLD NEWS BUREAU: John Wilhelm, Editor, Bonn, London, Mexico City, Paris, Sao Paulo, Tokyo.

WARREN W SHEW ..... Sales Manager

DISTRICT MANAGERS: E F Coffey, New York; N V Palmer, Boston; F P Coyle, Philadelphia; M S Kearney, Cleveland; E S Chapin, Detroit; W H Meneilley, Chicago; J T Schaefer, St. Louis; C W Dysinger, Los Angeles; R C Alcorn and T H Carmody, San Francisco; William Lanier, Atlanta; James Cash, Dallas.

OTTO DRECHSEL ..... Business Manager

ELECTRICAL WORLD

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. Publication Office, 99-129 N. Broadway, Albany 1, N. Y. Executive, Editorial and Advertising Office, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Electrical World—Subscription Service, 99-129 North Broadway, Albany 1, N. Y. or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are accepted only from executive, supervisory, and engineering personnel in electric utilities, manufacturing companies, and related fields. Position and company connection must be indicated on subscription orders.

Single copies 35¢. For the United States and possessions $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money, at par.) Other Western Hemisphere, and the Philippines, $15 for one year, $25 for two years, $30 for three years. All other countries $25 for one year, $40 for two years, $50 for three years. Entered as second-class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in USA. Copyright 1955, by McGraw-Hill Publishing Company, Inc. Permission required to reproduce any of contents.

ON TEST MORE THAN 35 YEARS

Designs for this O-B Unit started back in 1915

This O-B Insulator, No. 32440, a 10-inch suspension in current production, embodies TIME-PROVED features in design and construction. Choose your insulators on the basis of known dependability. Choose O-B!

You get a product of PROVED dependability in every O-B suspension insulator. For example, these features were in use back in 1915:

1. Wet-process porcelain
2. A glaze in compression
3. Sanded surfaces between porcelain and cement for high-strength assemblies
4. Provision for thermal relief to accommodate expansion and contraction forces
5. Malleable iron cap castings
6. Application of galvanizing to withstand corrosion

All of the above have been subject to continuous refinement. Other features have been added. After a third of a century of experience, we feel we can lay claim to proficiency in insulator design *and* manufacture.

To you - the user - this experience and this proficiency mean only one thing:

Time-tested, trustworthy O-B insulators give you a bonus in quality - at a competitive price - unmatched in the insulator industry!

4437-H

Ohio Brass

MANSFIELD OHIO, U.S.A.

IN CANADA: CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

Whose Dollars Build Distribution Load?

In recent years utilities have spent only one sixth the purchase price of new appliances to build capacity into the distribution system that serves them. Customer expenditures for appliances and utility expenditures for distribution, trended on the chart below, show an ever widening divergence. On first glance the utility engineer may well feel pride in this comparison. But sober reflection brings forth these two questions:

1. Can utilities continue to serve the growing residential load with distribution expenditures that are only one-sixth the cost of new appliances?

2. Is it prudent to risk boosting the selling price of appliances by stringent restrictions designed to minimize distribution expenditures?

A good illustration is found in the drive to boost room-cooler power factors over 90%. Late last summer the ARI-EEI-NEMA joint committee announced agreement on new minimum power factors for room coolers effective with 1956 models. Values set, after much research and deliberation, were 75% for ⅓-hp units, 80% for ½-hp, and 85% for ¾-hp and larger. Explanatory notes indicated that many coolers would approach the desired 90% pf. These notes stated that:

1. Bulk of production would be the ¾-hp unit for which a minimum of 85% pf is specified.

2. Because 85% pf is the minimum when measured under standard load and voltage conditions, many units would better this value in residences at prevailing outlet voltages.

3. Some manufacturers might incorporate the new standards in units sold before the end of 1955.

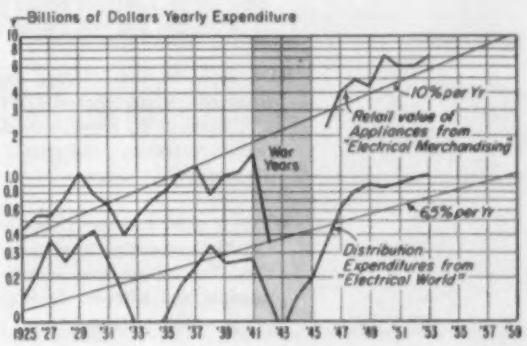
Despite the commendable accomplishment of this joint committee and its implication that further gains could be anticipated in subsequent years, members of the EEI Transmission and Distribution Committee by an unofficial poll have urged another boost.

Impetus for this vote came from operators in the South and Southwest who suffered serious distribution distress last summer from the unexpected rapid growth of air-conditioning load (EW Jan. 10, p 65). It was strengthened by an eastern operator who warned that any utility might find parts of its distribution system inadequate for a concentration of new room coolers in one area. Finally the vote was backed by a western sales executive who urged "at least a 90% operating power factor" to help utility and customer wiring serve air conditioning better.

Electrical World agrees that the problem must be scrutinized anew. But the final solution must be the one which gives the customer the most for his money. He pays in the end, either in the price of his room cooler or on his electric bill.

No doubt the EEI committee weighed these facts, and more, in their commendable contribution. Now it appears that their work cannot be finished until they come up with 90% power factor. Perhaps this is still possible without unduly boosting the price of room coolers.

But when this hurdle is reached, behind it lies the final question: "Is it better for the customer to pay more for appliances to operate on existing distribution, or would he gain in the end if utilities invest the equivalent in distribution more adequate to serve devices of lesser power factor?



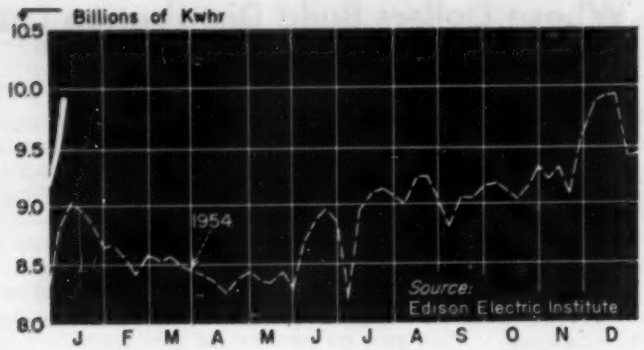
TVA's Contingent Liability Clause

Few people bother to read the fine print in a contract until a law suit arises. This thought has been expressed numerous times by sadder and wiser men.

Right now a number of electrical equipment manufacturers are taking a second look at a "special conditions" clause inserted in recent purchase contracts offered for bid by the Tennessee Valley Authority. This clause appears to carry a comprehensive contingent liability for failure of the equipment supplied by the contracting agent.

It has been tentatively interpreted to mean that the manufacturer is liable for all damages and loss of time or production which may result from any defect in the equipment furnished. Such a comprehensive liability is almost immeasurable. Manufacturers will stand behind their warranties and guarantees, but it is inconceivable that they could underwrite the kind of liability that TVA is seeking.

THE ELECTRICAL WEEK



Week Ended Jan. 8

9,833,000,000 Kwhr

Per Cent Change from Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Jan. 8	+11.4	+4.0	+5.1	+9.2	+5.2	+21.0	+12.6	+10.9	+13.4	+9.6
Jan. 1	+15.0	+9.6	+7.4	+15.2	+7.9	+23.1	+12.3	+11.5	+12.2	+13.0
Dec. 25	+15.4	+12.3	+9.1	+15.0	+6.2	+25.0	+11.8	+9.4	+11.8	+11.2

Seasonally Adjusted Index —177.1 Week Ago 177.6 Year Ago 158.9

The Issue's News Highlights . . . Utility and industrial group headed by Detroit Edison has advanced plans in the works for participating in AEC's new atomic power development program. Group is considering building an 85,000-kw breeder-type nuclear power plant . . . Eisenhower, in State of Union message, renewed his pledge to support partnership development of resources . . . Allis-Chalmers is low bidder for eight turbines for St. Lawrence power project; S. Morgan Smith is low on bid for four turbines . . . Congress gets bills calling for private development of Niagara power.

REA estimates that average annual energy usage of consumers connected to REA-financed systems reached 4,031 kwhr a customer during 1954, up 541 kwhr from 1953 . . . Gordon W. Evans, president, Kansas G&E, predicts that next 10 years will see higher percentage load growth than the phenomenal growth experienced during past 10 years.

MVGC's plans to issue 55,000 common shares to Middle South Utilities and Southern Co, the sponsoring companies, have approval of SEC's division of corporate regulation. Investment, says staff brief, "will serve public interest by tending toward economical and efficient development of their (Mid-South and Southern's) integrated public utility systems."

AEC this week weighs what may be most significant step yet toward opening nuclear power development to private industry. On Wednesday, commissioners consider a blueprint of the so-called Access Agreement. This is the plan under which private firms and individuals may obtain restricted information after being run through a streamlined security check (see other AEC news p 8 this issue).

Rep Chet Holifield (D-Cal.) hopes to get around a possible Presidential veto of any legislation to cancel the Dixon-Yates contract. He proposes to author a resolution to express the will of Congress that the contract be cancelled. He believes that Congressional directive to cancel would be binding on AEC.

First units of two plants on Ohio River slated to supply AEC's facilities near Portsmouth are expected to go into operation this month. One of units is first of six 200,000-kw generators that will operate in IKEC's 1.2 million-kw Clifty Creek Plant at Madison, Ind. The other is one of five 200,000-kw units to be housed in OVEC's 1 million-kw Kyger Plant at Gallipolis, Ohio. IKEC is OVEC subsidiary.

NEWS OF THE INDUSTRY BRIEFLY TOLD

Off the Washington Wire . . . Inter-Industry Farm Electric Utilization Council will run its first national power use workshop at Sheraton Hotel, St. Louis, Feb. 3-4. Program will feature eight separate roundtable discussions including market surveys, dealer sales, and wiring.

Duquesne Light has received ODM approval to amortize 75% of its $14-million investment in the new $85-million Shippingport, Pa., atomic power plant over five years. Insurance provisions of Duquesne's contract with AEC made it mandatory for AEC to foot the bill for an as yet undetermined amount of insurance, and to accept almost complete responsibility for loss or damage resulting from use of government-owned nuclear materials.

Gowrie (Iowa) Rural Electric Co-operative Association has become the second REA borrower in history to repay its federal loan. It completed payment 28 years ahead of schedule . . . Leonard Beck Jordan, a former Idaho governor, has been sworn in as head of U. S. half of U. S.-Canadian International Joint Commission which regulates boundary waters.

Washington Water Power has lost another round in its fight to block condemnation of its Chelan County property by Chelan PUD. State Supreme Court has rejected company's latest motion. Same court has set Jan. 25 for hearing Grant County PUD's case against State Power Commission over the Priest Rapids Dam. PUD plans to apply for FPC license (it now has preliminary permit) by July 1 to build project.

Electrical Equipment Representatives Association has elected Howard Petersen of Denver president; Edward W. Verbarg of Minneapolis, executive vice president; M. F. Knaus of Detroit, second vice president; J. E. Murray of Kansas City, treasurer; M. R. Horne of Dearborn, secretary; and Edwin C. Minteer of Winter Park, executive director . . . AEC has awarded Dr. L. R. Hafstad, recently retired as AEC's director of reactor development to go with Chase National Bank, the Distinguished Service Award.

Southwestern Power Administration has asked FPC approval to up rates an unspecified total amount . . . Boston Edison has introduced new rate, known as a "church rate," to cover electric service in an edifice set apart exclusively for public worship.

ABOUT PEOPLE IN THE INDUSTRY

Protagonists in "the great national debate on the question of public vs private power (should) end their controversy by accepting the fact that both are existing and integral parts of our national economy," says TVA Chairman Herbert D. Vogel. He also believes TVA can finance future expansion with bond issues sold on such terms as to require no material increase in rates.

AEC hopes "to have at least one reactor a year for the next several years" to get cost of electricity so generated down to competitive basis, AEC Chairman Lewis L. Strauss told National Press Club. Noting, too, that MVGC contract is better than either of first two negotiated with private utilities, he said "it had misfortune to occur in year when (political) issues were scarce."

More News About People page 36

Detroit Edison Readies A-Plant Plan for Participation in New AEC Program

A utility and industrial group headed by the Detroit Edison Co is a sure bet to seek one of the first federal licenses for the construction and operation of a nuclear power plant.

Advanced plans are already in the works for participating in the federal program announced last week for speeding atomic power development by supplying technical and other assistance. The Detroit Edison group is certain to be among the first two or three private groups to apply for participation and at the moment appears to hold the lead. Yankee Atomic Electric Co of Boston also intends to cooperate with AEC's new program.

One big question mark in the development of civilian nuclear power was erased last week with the Atomic Energy Commission announcement that it had fixed prices on the leasing of nuclear fuels to industry and on the purchase of fission products produced by outside sources. These prices are classified and available only to authorized personnel.

The Detroit Edison group has been conferring for months with the staff of AEC in working out a proposal for a breeder-type nuclear power plant. Some but not all of the members of Atomic Power Development Associates, formerly known as the Detroit Edison-Dow Chemical study team, will participate in advanced planning and actual construction of the proposed plant. At present there are 26 electric companies and nine other industrial and engineering firms affiliated with the team which is conducting research and development work.

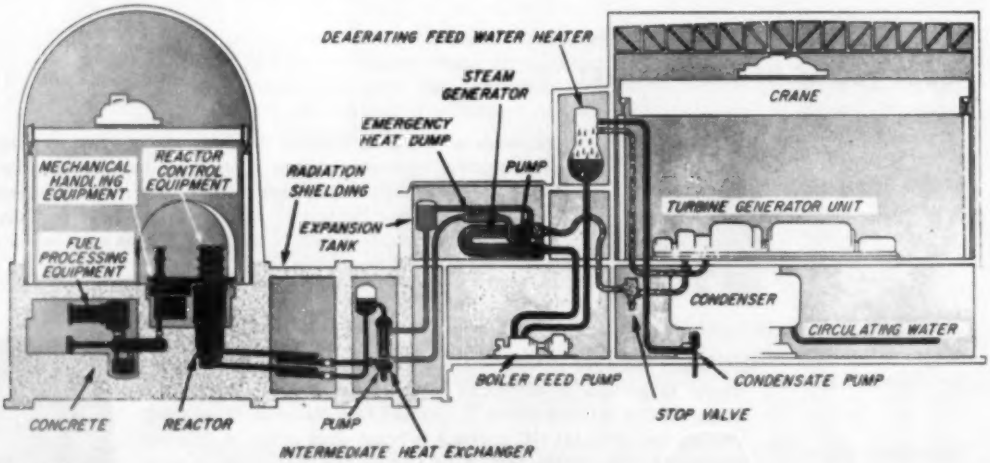
Plans discussed between the Detroit Edison group and AEC envision a plant with a nominal electric capacity of about 85,000 kw and a capability of approximately 100,000 kw. It would be a breeder-type producing heat and fissionable products. Detroit Edison Pres Walker Cisler told Electrical World that the plans also provide for irradiation servicing facilities in connection with the plant.

The reactor, one of the more advanced and promising, would employ a liquid metal coolant to transfer heat to the steam generating chamber. This would probably be done through a primary and secondary circuit as a means of minimizing the radioactive materials reaching the steam chamber. Thus far the engineers have been talking in terms of producing steam at 600 psi and 500F, but intensive efforts are underway to raise pressures and temperatures to gain more efficiency.

For discussion purposes, the conferees have chosen a tentative site on swampy land near the west end of Lake Erie somewhere between Toledo and Detroit. This site has enabled engineers to fill in some of their estimates on rights-of-way, foundations, and other items. However, Cisler said it is possible that the actual site might be in some other part of Michigan.

Tentative financing plans call for the industrial group to form a separate corporation for the purpose of con-

Diagram of breeder reactor being studied by Detroit Edison and associates



structing and operating the nuclear reactor and closely related activities. It is planned that Detroit Edison will furnish the site for the entire plant, purchase steam from the separate corporation at approximately 7 mills per kwhr, and build and operate the more conventional portions of the power plant.

The separate corporation hopes to raise construction funds through issuance of bonds covering about 75% of the costs and common stock covering 25%. Bank loans may be sought as an interim measure. The group may propose that AEC underwrite a part or all of the bonds. Common stock would likely be held by the utility and industrial firms participating in the project.

Some AEC staffers consider the group has already orally applied for a construction permit to begin the plant, but Cisler said the group is not committed to the government to file for an application. However, he said, "We are carrying forward our plans as rapidly and effectively as possible." Cisler indicated that it is possible the group will submit a specific proposal on or before the April 1 deadline set by AEC. "We are dead serious about our program," he said.

Group Enlarges . . . Seven additional electric companies and two engineering firms have recently come into Atomic Power Development Associates, the atomic power study group which Detroit Edison heads. This may indicate an increased surge of interest as a result of concrete plans. One of the companies, Central Hudson Gas & Electric Corp of Poughkeepsie, N. Y., stated flatly that the group proposes to build an atomic power plant in Michigan for "experimental purposes."

Other new member companies in the Detroit group include: Boston Edison, Connecticut Light & Power, Long Island Lighting, New England Gas & Electric Association, New York State Electric & Gas, Wisconsin Power & Light, Commonwealth Associates, Inc (engineering) of Jackson, Mich., and Jackson & Moreland (engineering) of Boston.

The fast breeder reactor, which the Detroit Edison group seeks to build, is classed by atomic experts as a long-term project. This means that it would

Story continues on page 10

PRESIDENT EISENHOWER outlines his program to Congress in State of the Union message

Ike Renews Partnership Pledge

In his 1955 State of the Union message, President Eisenhower renewed his pledge to support the partnership approach to development of the nation's natural resources, and promised Congress a comprehensive national water resources policy embodying this philosophy.

Recognizing that the economic growth of the United States has as its foundation the raw materials and energy produced from its minerals and fuels, lands and forests, and water resources, Eisenhower said the nation must adhere to three basic policies:

- To develop, wisely use, and conserve basic resources from generation to generation.
- To follow the historic pattern of developing these resources primarily by private citizens under fair provisions of law.
- To treat resources development as a private undertaking—a partnership in which the participation of private citizens and state and local governments is as necessary as federal participation.

The partnership policy is producing good results, particularly where water resources are concerned, Eisenhower reported. It has stepped up local planning and fostered federal-local coordination and cooperation, he said. He cited the increasing number of applications to Federal Power Commission for survey and planning permits as proof of local response, and the partnership projects approved by Congress for Priest Rapids in Washington, Coosa River in Alabama, and Markham Ferry in Oklahoma as proof of the way the partnership program is obtaining public support.

Emphasizes U. S. Obligations . . . The Chief Executive emphasized, however, that the federal government must not abandon its obligation to develop those water sites beyond the means of private enterprise. In keeping with this principle, he again urged Congress to approve development of the Upper Colorado River Basin, and promised to include in his Jan. 17 Budget Message a request for funds to start six new reclamation and more than 30 new Corps of Engineers' projects of varying size. Washington observers believed there was a possibility that the Fryingpan-Arkansas project would be included in these, but that few of the others would concern power. They also felt most would be small.

Eisenhower also said he would press for funds to support an office of coordinator of public works in the office of the President.

New AEC Program

(*Continued from page 9*)

require at least five years before the plant is ready for large scale testing unless some unexpected technical break-through occurs in the meantime. However the fast breeder was picked as second only to the homogeneous in promise to produce economical electric power.

Yankee Atomic Electric, headed by William Webster, is awaiting Massachusetts Department of Public Utilities' decision on its petition for approval of an initial stock issue of $317,500 to be used toward building an atomic plant in New England.

At the recent hearing in Massachusetts, Webster emphasized that much research accompanied by study of available material in the hands of AEC must be done before decisions can be reached as to the spheres of different types of reactors, more promising details of plant design, the location of the Yankee plant, and character of its output along with probable costs.

AEC Program . . . The AEC program announced last week ("power demonstration reactor program") is aimed at enticing private resources into development of engineering information. AEC has invited proposals up to April 1, 1955, from applicants willing to assume risks of construction, ownership, and operation of reactors designed to demonstrate practical value for industrial or commercial use.

AEC will extend to such participants incentives in the form of fixed financial support up to an agreed-upon ceiling, waiver of use charges for special nuclear materials not entirely consumed, free use of AEC laboratories and installations for testing, free access to AEC information, direct payment for time spent in research and development work on a qualified reactor design (this is intended to pay the way for individuals financially unable to participate without pay).

The schedule of basic prices AEC has approved provides for rates which domestic licensees must pay AEC for natural uranium, thorium, heavy water, uranium-235, uranium-233, or plutonium. Licensees will be charged full cost for "spent" fuel elements, but will be required to pay only "rental" charges for the remainder. AEC is to dispose of wastes.

St. Lawrence Turbine Bids:

Allis-Chalmers is low bidder for eight turbines; S. Morgan Smith is low for four units under different schedule

Two American companies have submitted low bids under different schedules of a contract for 71,000-hp hydraulic turbines to be installed at the St. Lawrence River hydroelectric project. Allis-Chalmers Manufacturing Co was low bidder for eight turbines, and S. Morgan Smith Co was low bidder for four turbines under a different schedule. All bids are being evaluated; no contracts have been let.

Bids were opened Jan. 5 by the New York State Power Authority which originally proposed four different schedules for 16, 12, 8, and 4 turbines. No bids were received for the first two schedules, but seven companies bid on the last two schedules. All bids are listed below.

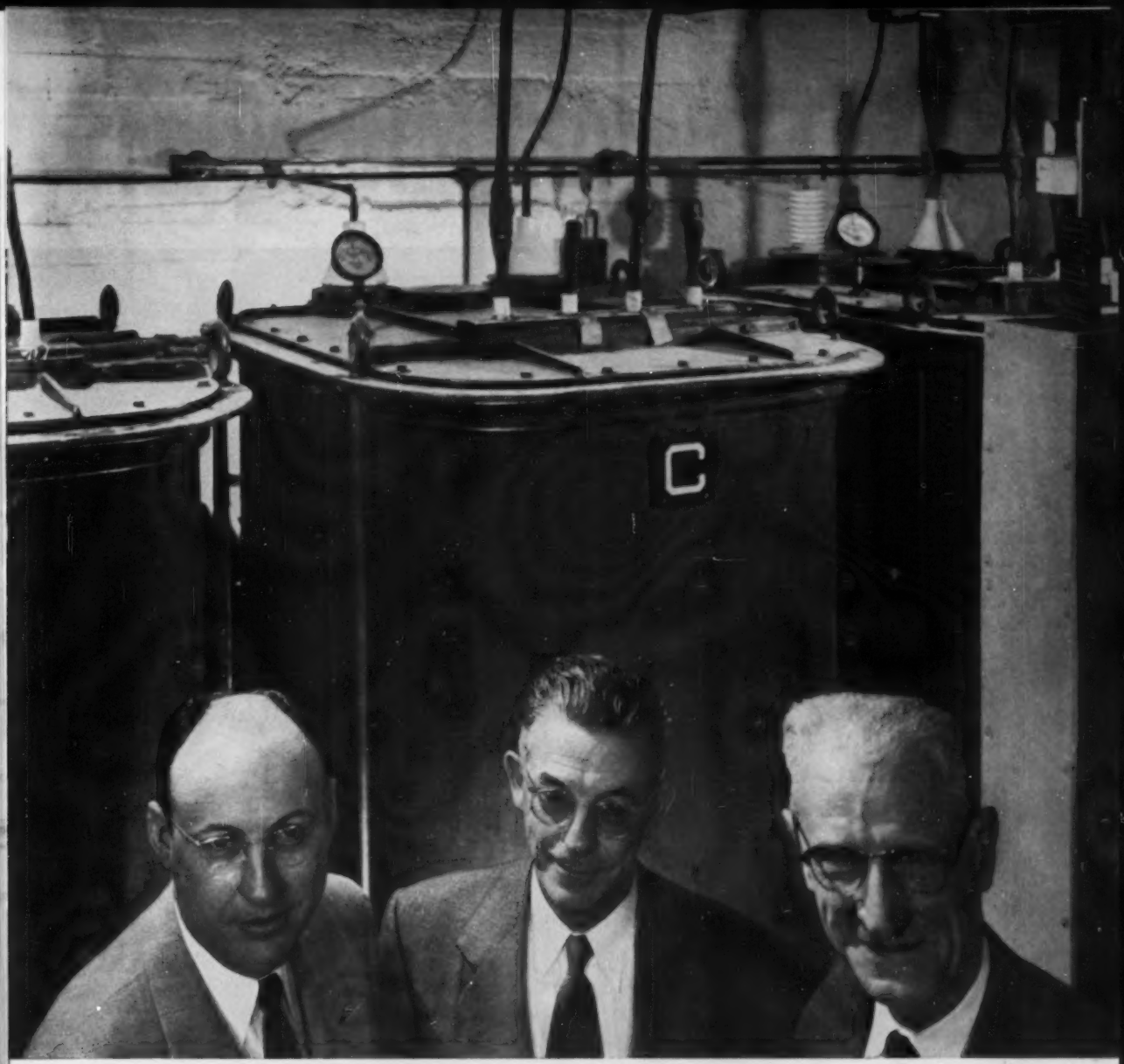
Bidder	No. of Turbines	Amount Bid	Gross Sum
Allis-Chalmers Manufacturing Co	8	$4,453,000	$4,618,950
	4	$2,287,000	$2,426,950
S. Morgan Smith Co	8	$4,510,000	$4,664,150
	4	$2,219,600	$2,350,550
Baldwin-Lima-Hamilton Corp	8	$4,510,000	$4,671,200
	4	$2,270,000	$2,407,500
English Electric Co of Canada, Ltd	8	$4,577,600	$4,778,460
	4	$2,459,000	$2,634,260
English Electric Export & Trading Co, Ltd (Main Offer B)	8	$4,802,345	$4,933,580
	4	$2,456,670	$2,574,190
Newport News Shipbuilding & Dry Dock Co	8	$5,102,750	$5,244,500
	4	$2,593,500	$2,716,250
English Electric Export & Trading Co, Ltd	8	$5,145,435	$5,287,400
	4	$2,628,350	$2,756,655
LaSociete Generale De Constructions Mecaniques et Electriques ALSTHOM	4	$2,885,000	$3,028,910

Senate, House Get Bills on Private Niagara Plan

Private power got the jump over public power in bills introduced during the first week of Congress to provide for development of Niagara River power. Three bills calling for developing of the American portion of the international power site by five of the New York power companies were dropped into the legislative hopper.

On the Senate side, Sen Homer Capehart, (R-Ind.) introduced a bill (S-6) which is identical to the Miller-Capehart Bill that passed the House in the first session of the 83rd Congress.

On the House side, Rep William E. Miller (R of N. Y.) reintroduced his bill (HR-142) that passed the House in the 83rd Congress and Rep George Dondero (R of Mich.) introduced a private power bill (HR-420) identical to the Miller bill.



LIFE BEGINS AT 52

Here's the winner, and its finders*, in General Electric's Treasure Hunt for America's oldest operating G-E transformer in the ASA range of ratings. This 52-year-old veteran is an 1100-kw, 30,800-volt, water-cooled transformer built by Stanley Electric, founder of G.E.'s plant in Pittsfield, Mass. It was installed early in 1902 by California Gas and Electric, later merged into the Pacific Gas and Electric Company. For more than 19,000 days, almost half a million hours, it has faithfully carried load with only routine maintenance. Now this old-timer gets a well-deserved rest and immortality (on a pedestal at G.E.'s Rome, Ga. plant), while P. G. & E. gets a brand new G-E Repetitive-Manufacture transformer. General Electric Co., Schenectady 5, N. Y.

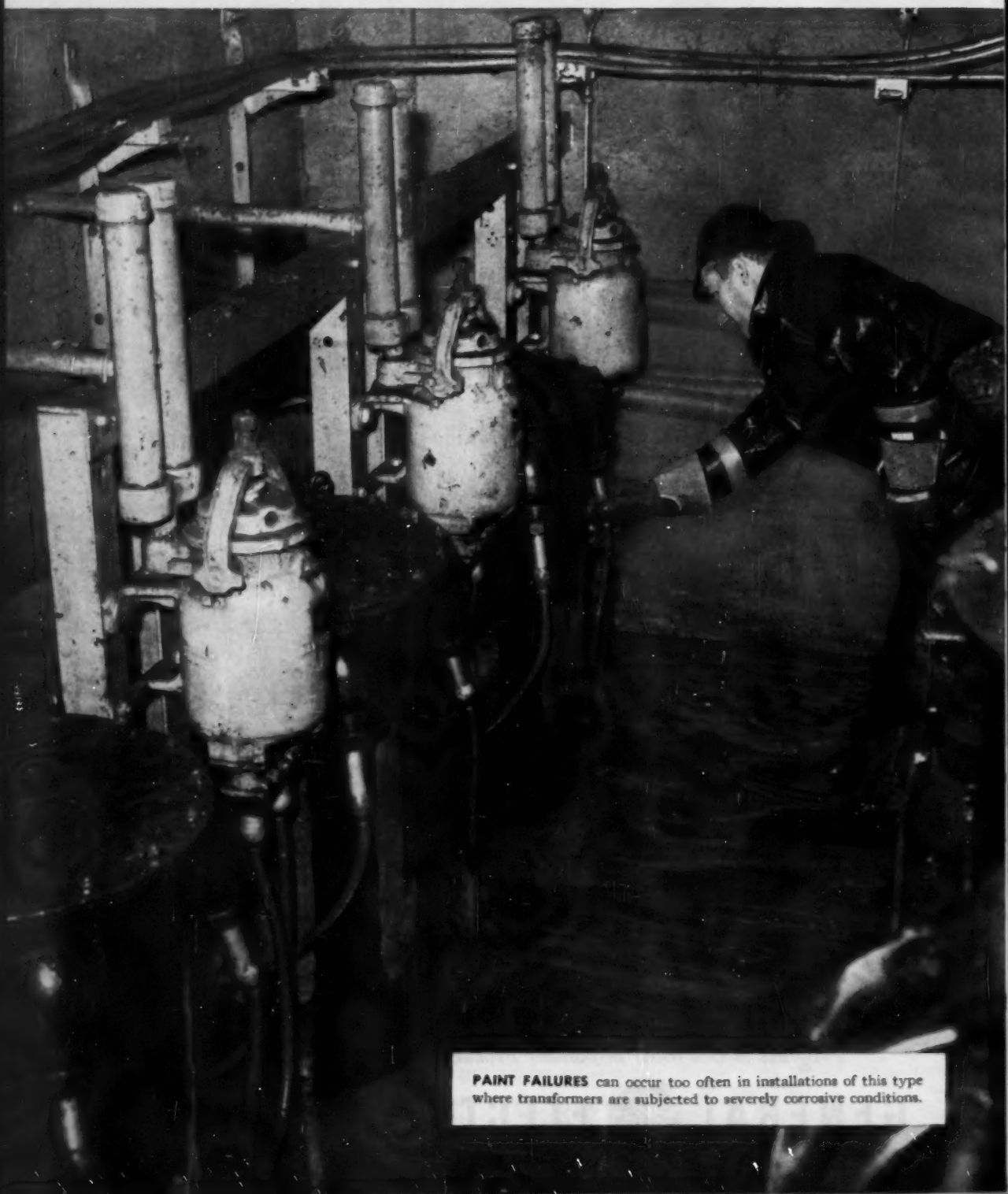
*Messrs. H. P. Brown and H. T. Sutcliffe of Pacific Gas and Electric with F. S. Glazier of General Electric. 411-52

Progress Is Our Most Important Product

GENERAL ELECTRIC

Power Transformer NEWS

NEW G-E PAINT RETARDS



PAINT FAILURES can occur too often in installations of this type where transformers are subjected to severely corrosive conditions.

TRANSFORMER CORROSION

MELAPRENE --- a new synthetic rubber finish --- protects G-E subway transformers from water, sewage, acids, calcium chloride

General Electric Melaprene finish lasts as much as 3 times longer than conventional coatings . . . brings substantial reductions in maintenance costs

At $100 a transformer—and that's a conservative estimate—the cost of removing and repainting subway units can run into thousands of dollars a year. You can substantially cut this expenditure by installing G-E subway transformers, now protected against corrosion with a new synthetic rubber finish, Melaprene. Two coats of Melaprene are applied on top of the present G-E subway finish.

Melaprene has extra-long life because it withstands the corrosive elements which run through ventilating grills onto your subway transformers. Melaprene is highly resistant, for example, to calcium chloride (now used in many cities for melting snow on streets), sewage, acids, and seawater, especially important in locations where tides may flood your subway vaults.

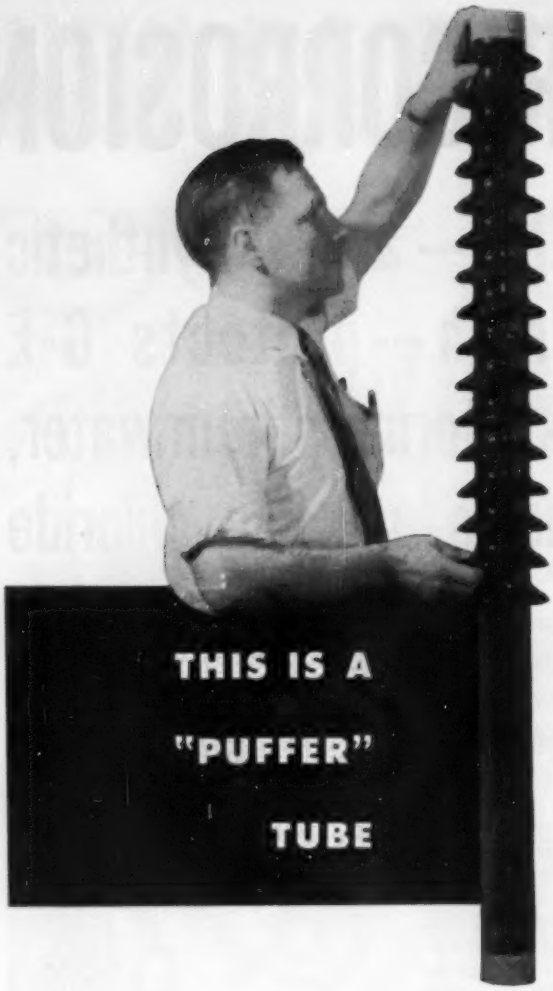
Durability of Melaprene is as much as 3 times greater than other paints. Melaprene test samples are still in top-notch condition after 5000 hours exposure in an accelerated salt-spray test. The best subway transformer finish previously available stands up only 1600 hours under this test. This improvement is a direct result of developmental work in G-E laboratories.

STRETCH TEST demonstrates strength, continuity, and freedom from porosity of the Melaprene paint film. Applied in two coats on top of the standard G-E finish, this new synthetic-rubber paint gives extra protection against corrosion.

For complete information on G-E subway transformers, now protected against corrosion with Melaprene, contact your nearest General Electric district office or write Section 431-27, General Electric, Schenectady 5, New York.

Progress Is Our Most Important Product

GENERAL ELECTRIC



This tube is designed to act as an insulating conduit or pipe, to carry a blast of air close to the jaws of an airbreak switch. As the switch opens and the arc initiates, the air blast, directed at the arc, cools and "blows it out."

The piece is 54″ long, 1½″ inside diameter, with a ¾″ wall thickness, unusually long and slender as high-voltage porcelain insulating parts go. To maintain straightness, it is suspended in the kiln during firing; and because the temperature required for complete vitrification is somewhat beyond the softening point of the body, there is a problem of the ability of such a piece to support its own weight.

The piece is produced as a clay extrusion from a pug mill, dried, and lathe-turned to a templet. Ability to produce a piece of such length and small diameter by lathe-turning of "stock" of the low strength of unfired porcelain, is a special Lapp skill.

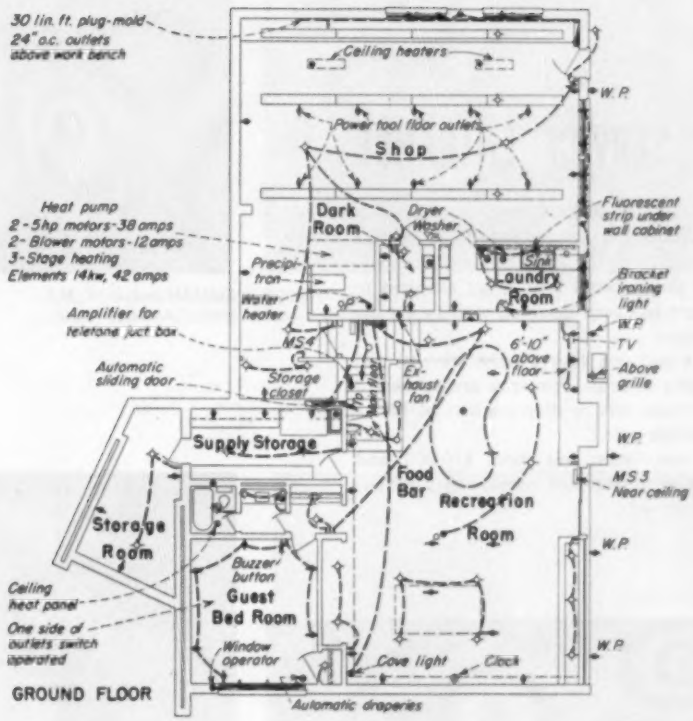
The plant superintendent says that this is not a particularly difficult piece. And that's a pretty good indication of how far Lapp has come in its ability to handle, as routine production, porcelain parts which in an earlier day would have been so difficult of manufacture that they wouldn't even have been designed.

Back of this ability is experience in the production of porcelain insulating parts requiring a wide range of manufacturing and control techniques. And that's a sound basis for the confidence of the entire industry on the mechanical and electrical security of porcelain by Lapp. On the porcelain components of equipment on your system . . . on the insulators carrying your transmission lines . . . the name LAPP is a guarantee of operating dependability, long life, low upkeep.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

TOMORROW'S ALL-ELECTRIC HOUSE . . .



● What is believed to be the most electrified house in the United States, with a 400-amp service entrance, was recently connected to the lines of Alabama Power Co. It is the home of Farley Berman, Anniston department store owner and contractor. James M. Hoffman of Anniston was the architect.

The home contains the following electrical equipment:

Heat pump, dehumidifier, electronic dust precipitator, six exhaust fans, glass panel and ceiling coil heaters, two separate surface cooking units, two ovens, dish towel dryer, refrigerator, deep freeze, and dishwasher. It has a food-mixer, coffee maker, toaster, knife sharpener, waffle iron, sandwich grill, garbage disposer, dumb waiter, washer, dryer, water heater, vacuum cleaner, floor polisher, electric typewriter, electric razor, electric fly killer, and electric lantern for killing night insects. All blankets are electric, and there are two television sets with motor-operated antennae, four radios, ten clocks, and six motors in the hobby shop.

A high fidelity installation has speaker outlets in every room, and an intercommunications system links all the rooms and the front door.

Electrically operated are interior doors, windows, vertical louvers, vertical venetian blinds, drapes, and jalousies which close automatically with the first drop of rain.

. . . IS HERE TODAY IN ANNISTON, ALABAMA

Story continues on next page

ELECTRICALLY operated louvers, translucent ceiling for shadow-free lighting, dish towel dryer (under counter), one of two cooking surfaces, feature kitchen section

Story starts on page 15

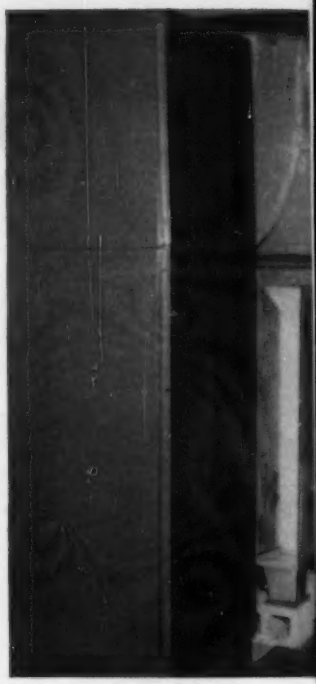
HOUSE HAS 400-AMP SERVICE ENTRANCE

Service entrance of the Berman house consists of a 400 amp. 3-phase main switch supplied through service entrance conductors of three 500 MCM and one No. 4/0 neutral at 120-240 v.

Connected load is about 100 kw, but simultaneous load is not expected to exceed 50 kw. Service entrance equipment has been designed with excess capacity in case it should be needed in future.

Power is supplied through one 25-kva and two 15-kva transformers, connected delta on the secondary with floating neutral. Primaries are connected Y to a 4,160-v distribution system. Overhead service drop consists of No. 2 and No. 4 copper directly off the transformer pole.

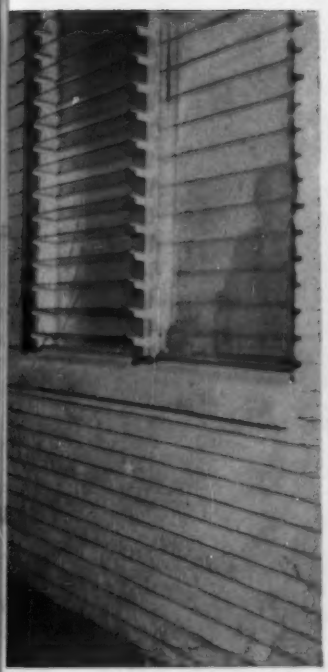
Electrical wiring and equipment and installation cost about $10,000, and wiring alone (15,000 ft low voltage permitting unlimited number of switches) cost about $5,000. Tri-plex outlets are standard.



BERMAN and J. W. Holland of Alabama Power

discuss heat pump and electrostatic dust precipitator

ARCHITECT Hoffman, Berman, and O. K. Seyforth, utility's divisional vice president, discuss 400-amp service entrance. House has five circuit slaves, and some lights can be dimmed or brightened



RECREATION room, far left, has island lighting, recessed spots, ceiling heater, inter-com fixture at bar, and music speaker against wall. Berman demonstrates the rain-activated jalousies, left. He also plans electrically operated lawn sprinkler system. Hobby-workshop, above, has outlets in wall bench edge and floor for power tools. Son's room shows electrically operated window dropping into wall recess and pulling down wire screen

Colorado Project Bill Revised

Commission agrees to inclusion of additional irrigation features at the insistence of Gov Ed C. Johnson

The Upper Colorado Commission in response to demands from Gov Ed C. Johnson of Colorado has agreed to the addition of $275-million worth of irrigation projects in the proposed Upper Colorado River project.

The project will be proposed to Congress in legislation to be introduced by western senators. The bill before the 83rd Congress proposed a $1.5-billion project. With the additional irrigation projects approved by the commission the total estimated cost now is $1.75 billion.

Commission members from Wyoming, Utah, Colorado, and New Mexico voted for the inclusion of proposed additional irrigation projects at a Denver meeting Jan. 8.

Although voting to include the new work, George Clyde, Utah member of the commission, declared: "This may break the camel's back. With these additions you are going to run the cost of the project up to $1.75 billion. That's a bigger bite than Congress has ever permitted before."

The revisions write in the Curecanti and Juniper power and storage dams in Colorado in addition to 18 Colorado and two Wyoming irrigation projects on a provisional basis.

The projects are on a provisional basis, commissioners said, because feasibility reports from the Bureau of Reclamation are not all complete. Under the 1944 Flood Control Act the provisional projects could be approved subject to later review upon completion of the feasibility reports.

The decision to include the Colorado irrigation projects represented a compromise with Johnson, who has threatened opposition to the project unless Colorado receives high altitude storage dams on the western slope.

At an earlier meeting in Cheyenne, Wyo., Johnson said he would insist on the division of power revenues from the project on the same basis as the allocation of Colorado river water among the upper basin states. A 1948 compact provides Colorado shall receive 51.75% of the upper basin water, Utah 23%, Wyoming 14%, and New Mexico 11.25%.

However, Johnson withdrew his power demand upon the commission's agreement to write in the 18 Colorado irrigation dams plus the multipurpose Curecanti and Juniper dams.

Bureau of Reclamation officials estimated the two principal dams in the project, Echo Park in Colorado and Glen Canyon near the Arizona-Utah border, will produce $434 million in power profits over a 71-year repayment period.

"That $434 million represents the money left after payment for the project with interest," said C. B. Jacobson, engineer in charge of Colorado River Project investigations for the Bureau of Reclamation. "After the 71-year repayment period, we figure the power plants on the two dams will produce about $20 million a year above maintenance costs."

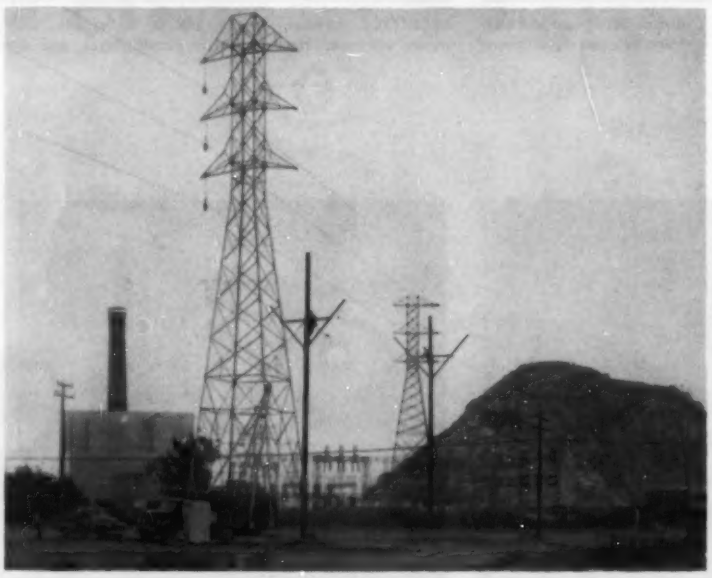
Despite the compromise, Johnson said he felt his power revenue demand was "responsible and equitable." He said he would like to see the legislation include a provision requiring the power revenues to be expended in the Upper Colorado basin.

FPC Postpones Decision in Hells Canyon Case

Federal Power Commission has deferred action on a motion to dismiss Idaho Power Co's three-dam Hells Canyon application. The commissioners said they would not rule on the intervenors' motion until all the evidence is in and Examiner William Costello makes his decision.

They said the motion requires a final decision, and that they would have to consider a substantial portion of the record.

Filing of the motion will result in a delay in filing of reply briefs. These had been due Jan. 10.



PG&E Crew Strings Morro Bay Line

Framed by historic Morro Rock at the right and Pacific Gas & Electric Co's new $44.3 million Morro Bay steam generating plant at the left, construction crew members of the utility are shown above as they string power lines for new 110-kv transmission line from Morro Bay to San Luis Obispo. To the right is a 220-kv tower for the Morro Bay-Gates Substation line.

The Morro Bay Plant, which will have an operating capacity of 300,000 kw, is scheduled to have its first unit in operation this spring.

No utility has ever "bought" a Watthour Meter

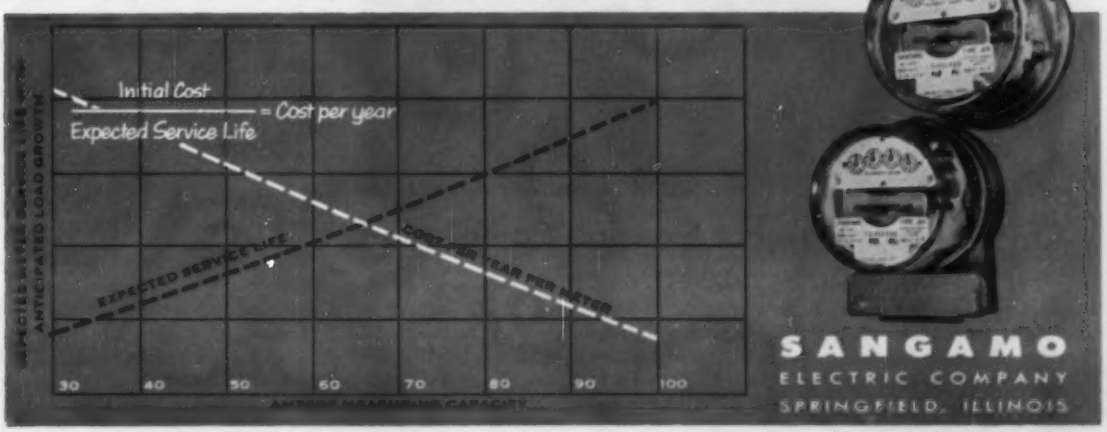
You see, to our way of thinking, a utility does not "buy" watthour meters—it invests in them. Watthour meters are the instruments through which an electric power company's revenue is determined. Don't you agree that purchasing them is really an investment . . . an outlay of capital with the view of obtaining an income or profit?

Over two hundred utilities with more than 25,000 customers on their lines have *invested* in nearly ¾ million J2 Meters since last March.

And their investments are protected because the J2 was designed specifically *to meet any future load growth.* If you divide the many years of service you can expect from a J2 Meter into its initial cost, the J2's cost per year is very low.

So when it comes to meters, choose the Sangamo J2 Watthour Meter, the first and finest 15 ampere meter with 100 ampere capacity . . . the meter that protects your investment in metering and lowers investment costs.

the FIRST watthour meter with straight line accuracy up to 100 amperes!



FHA Studies Home Wiring

Agency asks industry for recommendation on improving requirements in housing with government-backed mortgages

Better wiring may be forthcoming in homes backed by the Federal Housing Administration.

FHA has asked the electric industry to suggest ways to improve wiring requirements in new housing qualifying for FHA-insured mortgages, (EW, Dec. 20, p 5). Job goes to a five-man subcommittee newly formed by the Industry Committee on Interior Wiring Design. It will make proposals for upward revision of electrical provisions in the agency's Minimum Property Requirements.

Subcommittee members announced this month by Detroit Edison Co's Howard R. Stevenson, Design Committee chairman, include: H. H. Watson, General Electric Co for National Electrical Manufacturers Association; A. Carl Bredahl, Westinghouse Electric Corp for Illuminating Engineering Society; E. R. Cornish, for National Electrical Contractors Association; John Newton, Sr, president, Oakes Electric Co for National Association of Electrical Distributors; and Stevenson, representing Edison Electric Institute. John F. Biggi, National Adequate Wiring Bureau, is secretary of the subcommittee.

Present electrical provisions of FHA's Minimum Property Requirements fall far short of the "adequacy" and "efficiency" for which they originally were intended, said Stevenson.

The MPR now in use are below the voluntary standard of the 100-amp service entrance minimum adopted last year by National Association of Home Builders. NAHB provisions in turn cover only service entrance portion of adequacy standards promoted by the wiring bureau.

Federal Housing Administration officials announced Dec. 24 a decision to recognize in minimum requirements the fact that homes must be wired now for growing electrical loads. Present Minimum Property Requirements vary with regional conditions, but in general permit an insufficient number of circuits to be installed. Provision is made for only a relatively low power use. Also under present requirements the builder need not furnish complete electrical specifications with his plans, an omission which the electrical industry would like to see remedied.

Chief Joseph Project Nearing Completion

First water will spill over Chief Joseph Dam this month and initial power delivery is expected to start in July. The $187-million project, being built by the Army Corps of Engineers, will have a powerhouse with 16 generators rated at 64,000 kw each. Design will permit ultimate expansion to 27 units with total rating of 1,728,000 kw. Dam, located on Columbia River, is concrete gravity type, maximum height 235 ft.

Alabama Power Co Gets Hydro Project Permit

Federal Power Commission has issued a three-year preliminary permit to Alabama Power Co for a hydroelectric project including two powerhouses rated at 120,000 hp.

The company proposes to build one plant with an initial rating of 25,000 hp at existing U. S. Lock and Dam No. 17 on the Black Warrior River about 30 miles west of Birmingham. The other plant, with a capacity of 95,000 hp, would be constructed at New Hope Dam on Sipsey Creek of the Black Warrior.

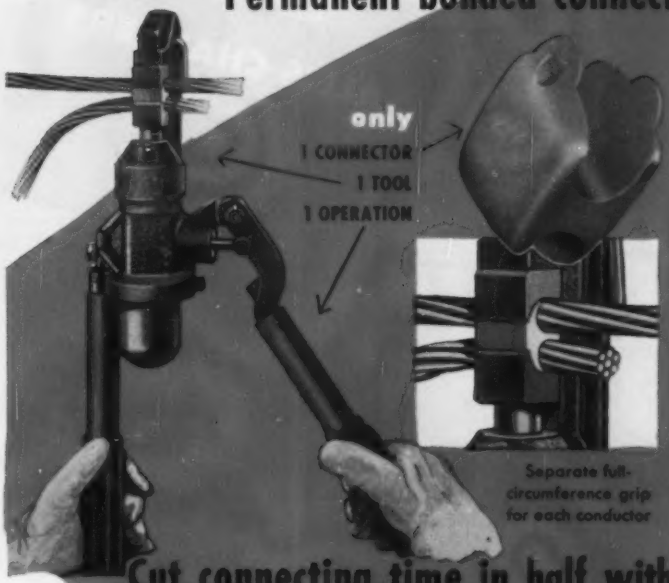
New Hope Dam is part of a multipurpose project proposed by Army Corps of Engineers. In issuing the preliminary permit, FPC declared that although Alabama Power's plan would conflict with the Army Engineers', "it is in the public interest to allow the applicant to obtain additional engineering and economic data which may be useful in further consideration of a plan of development of the Warrior River."

Central Maine Expansion

Development of a proposed steam-electric plant at Cousins Island in Casco Bay, near Portland, has been authorized by Central Maine Power Co. Initial installation will be two 44,000-kw units. The site will provide space for future developments.

It's a breeze...just squeeze!

Permanent bonded connections at less cost



Separate full-circumference grip for each conductor

Cut connecting time in half with

SQUEEZONS

and COMPRESSION CONNECTORS

Your line crews can handle any job in half the time with just one Squeezon tool and two types of connectors. The aluminum and solid copper connectors meet *all* line requirements, as shown on this page.

Squeezon connectors provide a *separate*, full-circumference grip on each cable, eliminating galvanic corrosion on transfer surfaces.

Copper Squeezon
One operation of the Squeezon compression tool permanently bonds this type of joint.

Aluminum Squeezon
Aluminum connector for aluminum conductor provides large area contact—prevents cold flow, copper to aluminum. No special connector necessary.

For T Connections
Costly special connectors are eliminated by the use of Kearney Squeezons for aluminum to copper connection.

Service Entrance Sleeves
for high-pressure connecting of secondary to meter loop.

Dead-Ends
When multiple connectors are used, Squeezons really save time.

Stirrup Tap
Two Squeezons and a short piece of wire make an inexpensive, easy-to-install stirrup; insure a rigid, arc and corrosion-proof connection on hot lines.

Line Splice
Line splices are better electrically and mechanically with Squeezon sleeves.

QUICK-SERVE BIN BOX
(Patented)
Squeezons are easily accessible in these handy boxes.

JAMES R. KEARNEY CORPORATION
ST. LOUIS MO.
GUELPH, ONT.

JAMES R. KEARNEY CORPORATION, 4224-42 Clayton Ave., St. Louis 10, Missouri
Canadian Plant: Guelph, Ontario

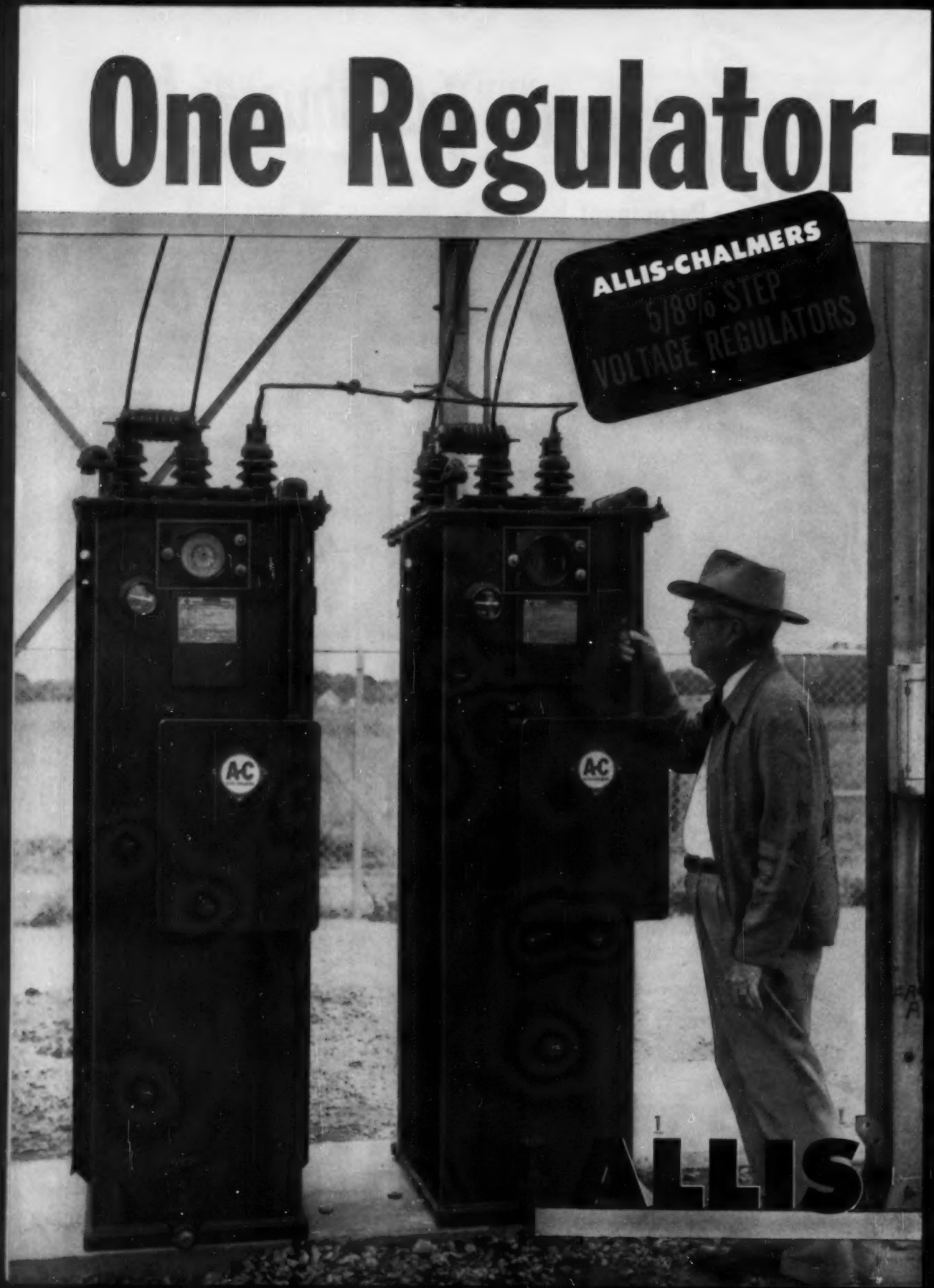
262

Specify

KEARNEY Products

For Better Construction . . . For Safer Maintenance

One Regulator-



5 RATINGS

Vari-Amp feature on single-phase power regulators provides flexibility for system growth

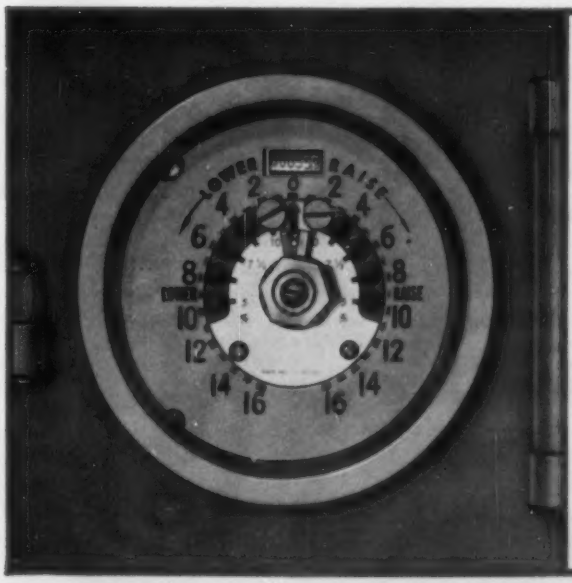
YOU GET FIVE CURRENT RATINGS and five ranges of regulation on a single Allis-Chalmers single-phase power regulator equipped with the *Vari-Amp* feature. Here's an example: a 200-amp single-phase power regulator can be operated at any of the following ratings:

200 amps—20% range **267 amps—15% range**
229 amps—17½% range **320 amps—12½% range**
400 amps—10% range

This means initial cost can be reduced in most cases. And, when loads increase, you can decrease range of regulation in proportion — instead of slicing ranges in half, as with all other regulators. Extra short-circuit capacity is available, too.

The *Vari-Amp* feature also permits unequal range of operation. Under certain conditions you can get full 10% buck even at the higher ratings. It will pay you to get all the facts. Consult your nearby Allis-Chalmers office or write Allis-Chalmers, Milwaukee 1, Wis., for Bulletin 01B6065C.

A-4459



It's This Easy to Change Ratings

3 Simple Steps!

1 **OPEN INDICATOR WINDOW**

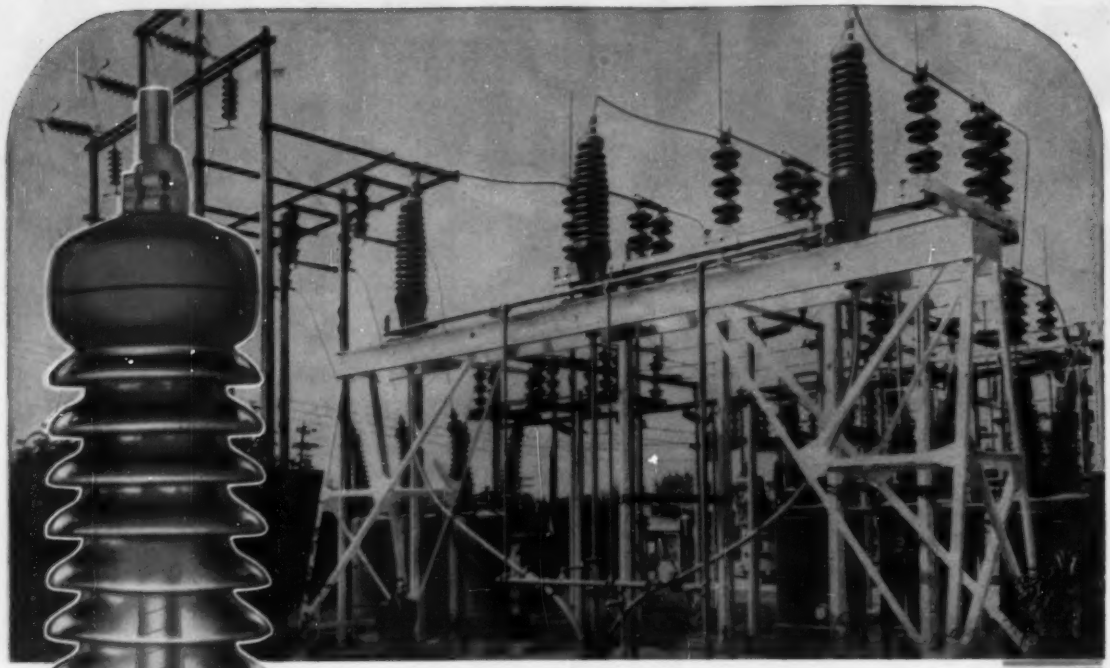
2 **PLACE LIMIT SWITCH PINS IN DESIRED POSITIONS**

3 **CLOSE INDICATOR WINDOW**

CHALMERS

A-C ALLIS CHALMERS

Originators of ⅝% Step Regulation



High Pressure . . . Oil filled
POTHEADS by G&W

Proper treatment of mechanical and electrical stresses permit this simple G&W design. Full 200 pound pipe line oil pressure is retained by the relatively small bore porcelain shell. Tested at 500 p.s.i. pressure. No castings are used for withstand of pressure. Top and bottom fittings are fabricated, non-magnetic, stainless steel—sealed by fully retained "Resistoyl" gaskets.

Stress relief cone, supplemented by porcelain stress control tube, makes efficient use of the internal diameter and length of porcelain shell—and reduces the amount of installation labor.

Phantom view shows G&W type "ATA" 161 kv. pothead. Background installation shows G&W type "ATA" 115 kv. potheads. The first 230 kv. potheads installed in U.S.A. are G&W type "ATA" at Garrison Dam, No. Dakota.

For further data, drawings and prices, send us a complete description of your cable.

G&W regularly furnishes Cable Joints, Oil Reservoirs, and accessories for oil and gas filled cables direct or through cable manufacturers.

G & W ELECTRIC SPECIALTY CO.

7780 Dante Avenue, Chicago 19, Illinois

Representatives in principal cities of U.S.A.
In Canada—Powerlite Devices, Ltd.,
Toronto, Montreal & Vancouver

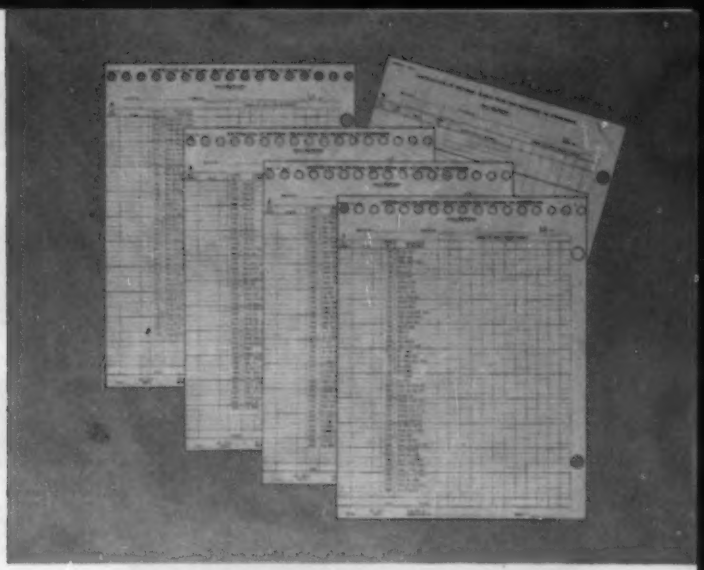
1905
50th ANNIVERSARY
1955

G&W

AT 551

Pre-printed Forms

and Calculators . . .



Simplify Utility's Stores Accounting Procedure

Story continues on page 27

Photo: Burroughs Corp

America's Finest Suspensions...

THANKS TO VICTOR "KNOW-HOW"

and Purified Porcelain!

VICTOR No. 900
SUSPENSION

SPECIFICATIONS

Type	ball socket
60 cycle Dry Flashover	80 KV
60 cycle Wet Flashover	50 KV
Pos. Impulse Flashover*	125 KV
Neg. Impulse Flashover*	130 KV
Dry Arcing Distance	7⅝"
Leakage Distance	11½"
M and E Strength	15,000 lbs.
Impact Rating	55 lbs.
RNI	50 Microvolts
1000 KC at applied	10 KV

*Crest KV. 1½ x 40 microsecond wave Critical Value

Every VICTOR Suspension insulator is the result of sound design, superior craftsmanship and VICTOR *Purified* Porcelain—finest insulator porcelain ever made! That's why they have improved thermal resistance, better mechanical and electrical characteristics and greater resistance to impact. Thanks to VICTOR's unique "know-how," you just can't buy a better suspension!

For the full facts on Victor "Know-how," write for "The Story of Victor and Purified Porcelain." For engineering data on all Victor insulators, write for Bulletin No. 4.

FEATURES

1. Higher mechanical strength
2. Greater resistance to thermal variations
3. Unequalled uniformity of mechanical and electrical values
4. Unequalled resistance to impact
5. Specially compounded cement for maximum strength
6. Caps and pins scientifically designed to withstand pull far above NEMA specifications
7. All metal parts hot-dipped galvanized for maximum resistance to weathering and corrosion
8. Special "cushion" coatings at all joining surfaces

NEWS FROM VICTOR

Victor has more than doubled the area of its ceramic laboratory. The enlarged laboratory affords Victor better, more modern facilities for testing raw materials, controlling quality of production and carrying on basic ceramic research. It was made necessary by Victor's expanding research program now under way.

SPECIFY VICTOR

Purified Porcelain Suspensions!

VICTOR INSULATORS, INC., VICTOR, N.Y.
SUBSIDIARY OF I-T-E CIRCUIT BREAKER CO.

Low and High Voltage Pintypes • Suspensions • Guy Strains
Spools • Switch and Bus Insulators • Custom Designed Porcelain
Insulator Hardware

Stores Accounting Simplified

By designing pre-printed forms and eliminating details, Indiana & Michigan Electric Co has simplified its stores accounting system until there is now only one pricing operation per item, one extension per item, and one posting per item to the stock ledgers per month.

This system has reduced the cost of the stores accounting section 25%. Monthly calculations have been reduced from around 30,000 to 10,000 and the accuracy and speed of the present system provide far better control, according to Carl M. Mortenson, office manager in the South Bend offices of I & M.

Formerly, storerooms closed transactions on the 25th of the month. Six hours of overtime per employee were required. Storerooms now close transactions on the final working day of the month, and records are completed in six days without overtime.

Old System . . . Previously individual tickets were used for each stock number, thousands of tickets being handled each month. The tickets were individually charged or credited, sorted, recapped, and summarized.

This system became too costly as the company expanded. Simplified methods for handling the existing volume of work and allowing for future growth were essential. The system, placed in use in January, 1953 has since been thoroughly tested.

New System . . . Outstanding features of the system are standardization of stock numbers for items common to all storerooms and preprinting of numbers and descriptions on Distribution of Material summary sheets. Four pages of these forms contain listings of nearly 200 master stock record numbers, covering 90% of all materials used, although storerooms may have as many as 500 sizes and variations per master stock number. Accounting for them is handled in total, and they are priced on an average cost basis. The pre-printed forms eliminate writing stock numbers and descriptions along with possible errors in transcribing.

After a storekeeper makes a requisition, he forwards it to the stores accounting section of the general accounting department. About 10,000 requisitions are received each month.

Electric Calculator Used . . . Clerks daily post requisitions from the field to the Distribution of Materials sheets by accounts or work orders. At the end of the month or upon completion of a "DM" sheet, quantities are cross-added by a two-total electric calculator. Individual totals are transferred to the upper dials of the machine for the net grand total of items issued. Square balancing to the grand total proves the total issues.

Costs of the items issued are obtained by multiplying quantity by average unit cost. The average unit costs are listed on a price sheet which is placed on a peg-bar adjacent to the Net Issued column. As individual values are calculated, they are transferred to the upper dials of the calculator to provide automatically the total value of items issued. The total amount charged to account classification must check with the total value of the stock items.

Separate DM Sheets . . . A separate Distribution of Materials form was designed for handling items not common to all storerooms. Stock number, description, quantity, and value are entered on this form, and the perforated carbon copy can be separated into unit tickets for summarization.

The quantity and value of every item issued during the month is rapidly and accurately determined by the pre-printed forms shingled on peg-bars and the electric two-total calculators. Then, by recapping totals, the quantities and values for each account or work order, for each storeroom and for the entire company are determined. A column of the recapitulation sheet allows for storage costs to be applied to material costs.

Under this system, control ledgers are maintained for each storeroom and total company. These control ledgers show the charges for material issued for operating, construction, other work in progress, etc. The totals of these charges by accounts become the General Ledger Entries.

Once a month a posting machine operator posts to stock ledgers. These show total quantity and value of every item received and disbursed, and balance on hand with its location.

Army Engineers Plan Fish Facilities at Dam

Experimental fishway facilities, intended to solve problems in connection with upstream migration of anadromous fish past Columbia river dams are planned by Army Corps of Engineers at the Washington shore fish-ladder of Bonneville Dam. Emphasis on economy of design and construction will be a primary goal, according to Corps' announcement to invite bids for the facilities, which will be built principally of lumber and are to be ready for use Aug. 1.

Bids will be opened Jan. 20 in Portland.

The first year's operation of the facility, intended to cover a period of five years, will concentrate on specific upstream migration problems. Special lighting of the experimental flume is contemplated plus a special light-proof building to control the effect of lighting. Other items; a water supply from the forebay, a flow introduction pool with diffusion chambers and a holding pool for assembling the adult salmon to be led through the northshore ladders.

Col James U. Moorhead, Portland district corps' engineer, explained the work is part of the Corps Columbia River fisheries engineering and research program. The facility will be used by the U. S. Fish and Wildlife Service, the federal agency represented on a technical advisory committee which includes Washington and Oregon fisheries agencies.

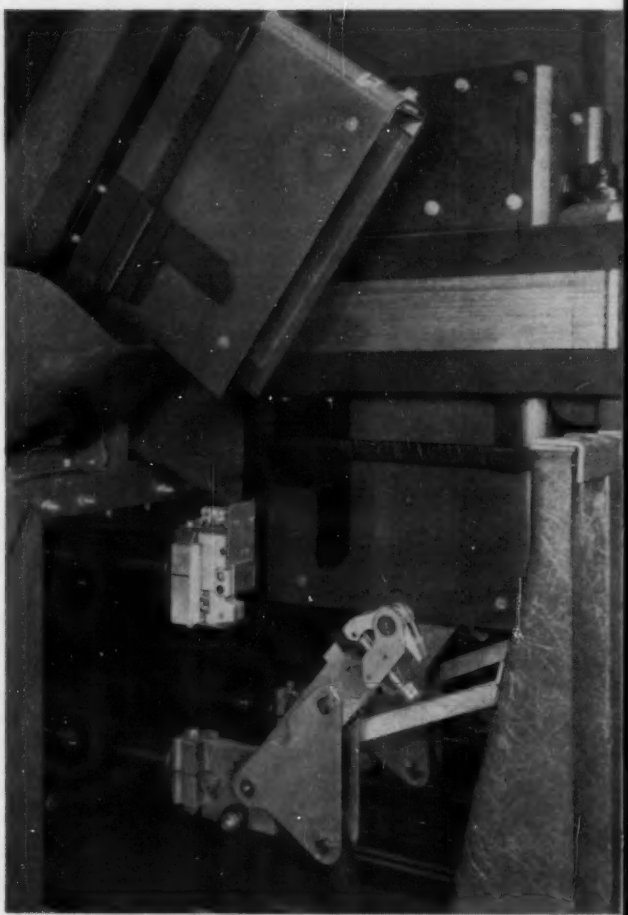
Idaho Wildlife Federation Supports 4 NW Dams

Second District Wildlife Federation of Idaho has voted to support construction of four Pacific Northwest power projects, including the Mountain Sheep and Pleasant Valley sites on Snake River. The two locations are being studied by four private power firms incorporated as Pacific Northwest Power Co. The four-power group, which is abandoning Penny Cliffs dam site studies because of federal opposition, is considering a second Clearwater Dam at Bruces Eddy.

The federation also backed the proposed Libby Dam on Kootenai River in Montana, and is supporting a "dam or dams in the Hells Canyon reach" of the Snake.

Come to the plant and going into I-T-E Metal-

1. Horizontal drawout design. Even heavy 13.8 kv circuit breakers, such as this one, roll out easily on permanently attached wheels. Breaker compartment is full-depth, one-piece welded frame, retains shape, permits lifting as a unit.

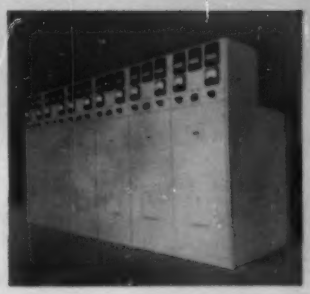


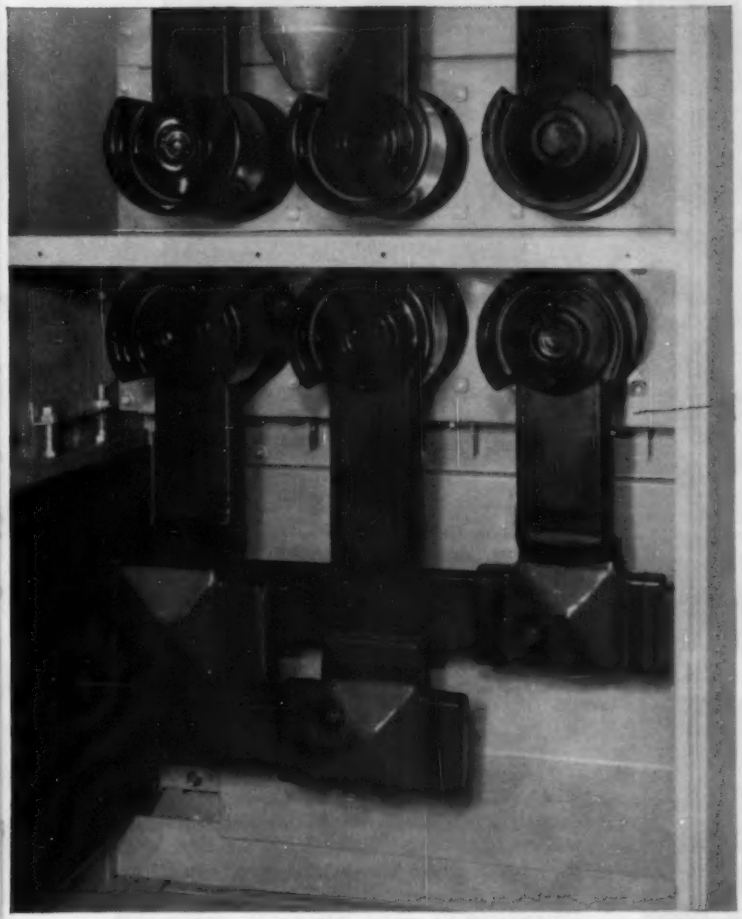
2. Positive arc interruption. On 13.8 kv breakers, double-coil, closed-iron magnetic blowout circuit draws arc rapidly into overhead quenching chute. Pivoting arc chutes, shown above, facilitate maintenance. Note sturdy contact assembly.

Discover in these pictures just a few of the extra-value, quality features in all I-T-E Metal-Clad Switchgear. They were taken right here in the I-T-E plant and show the equipment in process of manufacture.

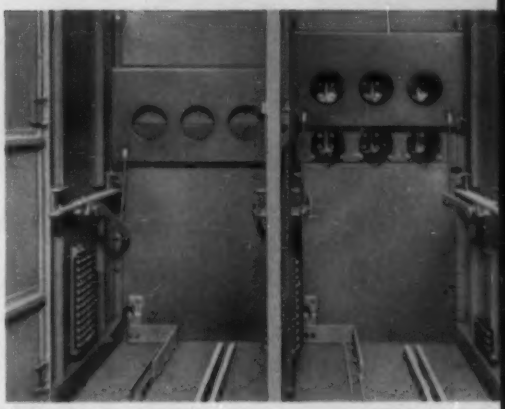
If you're planning new construction where you will need metal-clad switchgear, take a tip that can help you make the very most of your investment dollar: Visit the I-T-E plant here in Philadelphia. See the quality features actually being built into the equipment—quality that keeps I-T-E Switchgear performing more safely and dependably all the years it serves you. See the scenes shown on these pages, plus dozens more like them. See the extra value in I-T-E Switchgear that you won't find in any other

see the extra value Clad Switchgear





3. Bus rigidly braced, heavily insulated. View into rear of 13.8 kv compartment shows porcelain disconnect bushings and bus supports which insulate and hold the bus in alignment during short circuit stresses. Steel paneling throughout forms isolated compartments.



4. Superior isolation of compartments. Gravity-type shutters, shown closed at left and blocked open at right, isolate primary terminals from breaker compartment.

5. Fine, durable finish. All panels and doors are first bonderized and cleaned with spirits, then painted with three coats of enamel—baked on and rubbed down.

make. I-T-E Metal-Clad Switchgear is available in ratings through 13.8 kv, 500 mva.

For details, contact the I-T-E field office nearest you. Look in your classified directory under "Electric Equipment." I-T-E Circuit Breaker Company, Switchgear Division, 19th and Hamilton Sts., Philadelphia 30, Pa.

I-T-E

CIRCUIT BREAKER COMPANY
Switchgear Division

THE END —A NEW ERA

FROM these headquarters at 60 Broadway, New York, North American directed operations for 33 years.

UNION Electric's Meramec, efficient new steam plant, symbolizes bright future for company

North American Passes—Becomes

This week North American Co, once among the most successful of holding companies, makes its final distribution of Union Electric Co of Missouri common stock. Thus ends an era.

North America's heir, Union Electric, comes into independence as a bright new era looms for electric utilities—the atomic age, the age of power.

The North American system has been slow in dying. When, under the direction of President Franklin D. Roosevelt, the Securities and Exchange Commission began enforcing the "death sentence" of the Public Utility Holding Co Act of 1935, North American controlled or had interest in about 80 companies through more than 30 major subsidiaries.

At its peak, North American held sway over properties worth more than $2 billion. These included street railway, electric, gas and other properties from coast to coast, from Illinois to Mississippi.

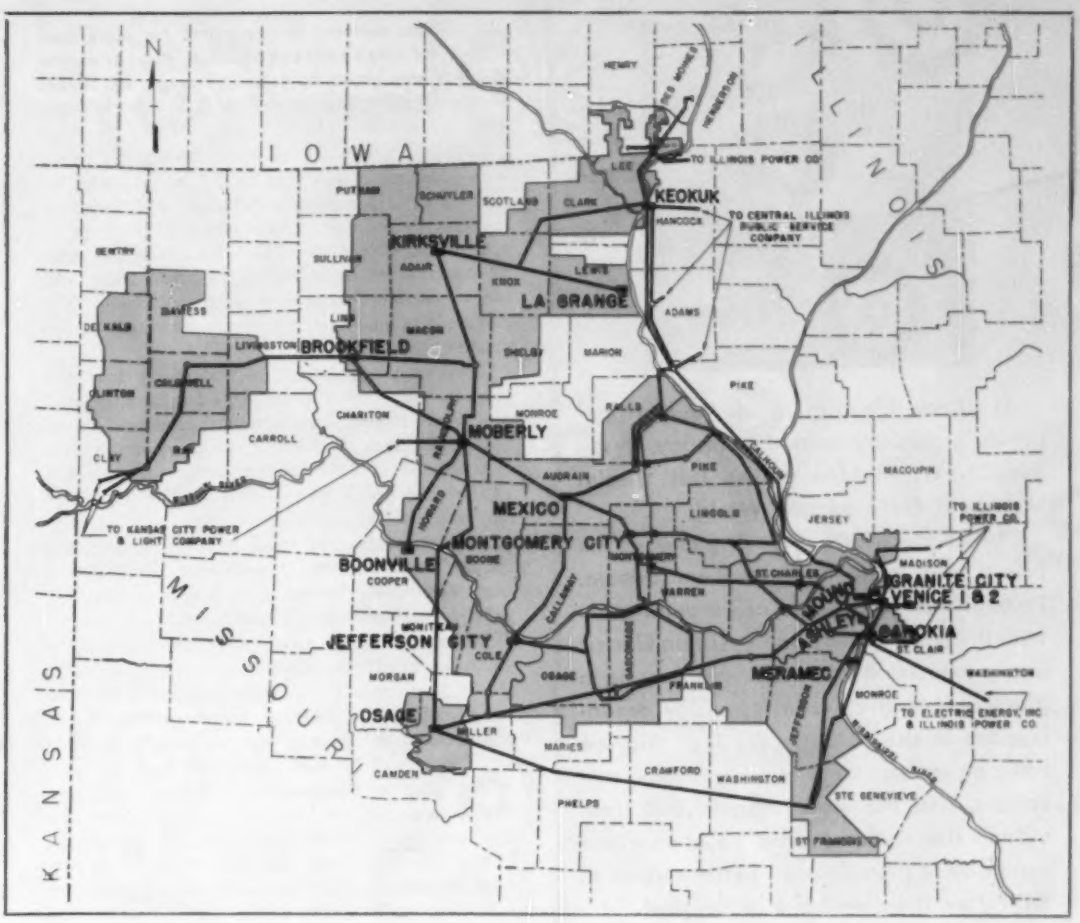
North American was incorporated in New Jersey on June 14, 1890, as a holding company, to acquire the assets of Oregon & Transcontinental Co, also a holding company. Total assets acquired were valued at $52 million, and the company issued $40 million of capital stock.

As Union Electric takes up where North American leaves off, it acquires from the holding company all its remaining assets, represented by cash and sundry investments totaling $40 million. This addition to its existing strong financial resources puts Union Electric in a position to meet the increasing demands for power in its service area and the opportunities of nuclear power development.

The Union Electric System has a gross plant account of $504 million and operating revenues of over $113 million for the 12 months ended December 31. With a plant capacity of 1,423,000 kw it serves 575,000 electric customers and 28,000 gas customers in a 16,500-sq mile service area in Missouri, Illinois, and Iowa.

It includes these subsidiaries:

Union Electric Power Co distributes electricity to 70,000 customers in East St. Louis and Alton, Ill., and Keokuk and Fort Madison, Iowa, and surrounding areas. It generates the major portion of the



Union Electric of Missouri

electric requirements of the parent Union Electric. The subsidiary owns Union Colliery Co and provides natural gas service in Alton.

Missouri Power & Light Co sells electricity to 60,000 customers and natural gas to 20,000 customers in central and northern Missouri. It does a minor amount of water and heating business.

Union Colliery Co produces about 900,000 tons of coal a year from a mine near DuQuoin, Ill. Major portion of this coal is burned in the system.

Poplar Ridge Coal Co produces about 500,000 tons of coal annually from a mine near Sturgis, Ky., and owns a fleet of 36 river barges. It is the principal source of coal for the new Meramec Plant.

St. Louis & Belleville Electric Railway Co operates a freight railway between Belleville and East St. Louis, Ill. It hauls up to 2 million tons of freight annually, principally coal for use in power plants.

Union Electric's connection with North American goes back to the turn of the century.

In 1901, North American acquired 80% interest in Imperial Light, Heat & Power Co and two other companies in St. Louis. In 1902 it consolidated its holdings of Imperial and other St. Louis companies and organized Union Electric Light & Power Co in exchange for 50% of the common stock of the company. North American later acquired and consolidated further small electric properties in St. Louis and acquired all the Union Electric common stock.

North American's interests finally were spread out in Milwaukee, Mississippi, San Francisco, Washington, D. C., Cleveland, Detroit, and many smaller cities. In financing and supervising these many companies, North American did much more than increase available electric power for homes, business, and industry. By providing industry with ample supplies of cheap power, it made possible production economies and cheaper products for the public, opened thousands of new jobs, and improved the standard of living.

As Union Electric Co of Missouri becomes a publicly owned company, President J. W. McAfee makes this special statement for Electrical World:

"Union Electric Co is looking toward the future with confidence and enthusiasm. Through the long years of its association with the North American Co, Union Electric has grown from humble beginnings to a place among the dozen top utility organizations in the nation. We feel that we have an obligation to our employees, customers, and the more than 46,000 individual shareholders who now own the company to provide even better service in the future than we have in the past."

This week's stock distribution completes the dissolution plan agreed upon with SEC. Some properties have been sold. Stock in others has been distributed to North American holders. Larger subsidiaries have absorbed smaller companies. The final stage was distribution of Union Electric common stock on the basis of one share for each 10 shares of North American. Union Electric is now owned by some 46,000 stockholders from all sections of the United States.

These stockholders have acquired a vigorous, growing company in a key location of the nation. Under the guidance of such leaders as J. W. McAfee (also the last president of North American) and Ralph E. Moody, chairman, Union Electric has a promising future.

The heart of the territory the company serves is the greater St. Louis area, a major crossroads of the nation. From here comes more than 75% of the system's electric revenues. St. Louis leads the country in diversification of industry. Nearly 76% of the 468 industrial classifications established by the U. S. Census Bureau are represented in this area, and no one industry is responsible for more than 8% of the area's total employment. Postwar expansion has been above the national average, and studies predict a population growth of 6% by 1960 and 15% by 1970.

Last year, production of power by Union Electric plants reached a new high of 7.7 billion kwhr, an increase of 235 million kwhr over 1953. Average residential customer use was about 2,650 kwhr, a gain of 310 kwhr from 1953. The gain is attributed to the constant trend toward electrical living and the tremendous increase in air conditioning. The company estimates it will reach saturation in air conditioners in 10 years.

To meet this growing air-conditioning load this year, the company is spending $4.5 million, in addition to its regular construction expenditure, on its distribution system. Regular construction this year is scheduled at $37.5 million compared with $28 million last year. This is part of the long-range half billion dollar expansion program.

The funds acquired from North American will enable Union Electric to undertake much of the expansion without recourse to long-term financing or to issuing additional common stock.

To cope with air conditioning, the company is enlarging transformer capacity at 6,000 locations in the St. Louis area and in some portions of the outlying territory. In addition, the equivalent of five additional distribution substations will be installed and 75 miles of primary lines rebuilt.

This year the company also will push an aggressive sales promotion program in cooperation with appliance dealers. In common with other companies, Union Electric's peak load has shifted gradually from winter to summer although winter peaks are still close to hot weather highs. To balance this load curve (1954 hot-weather load was 35,000 kw over 1953), the company is actively pushing development of the heat pump.

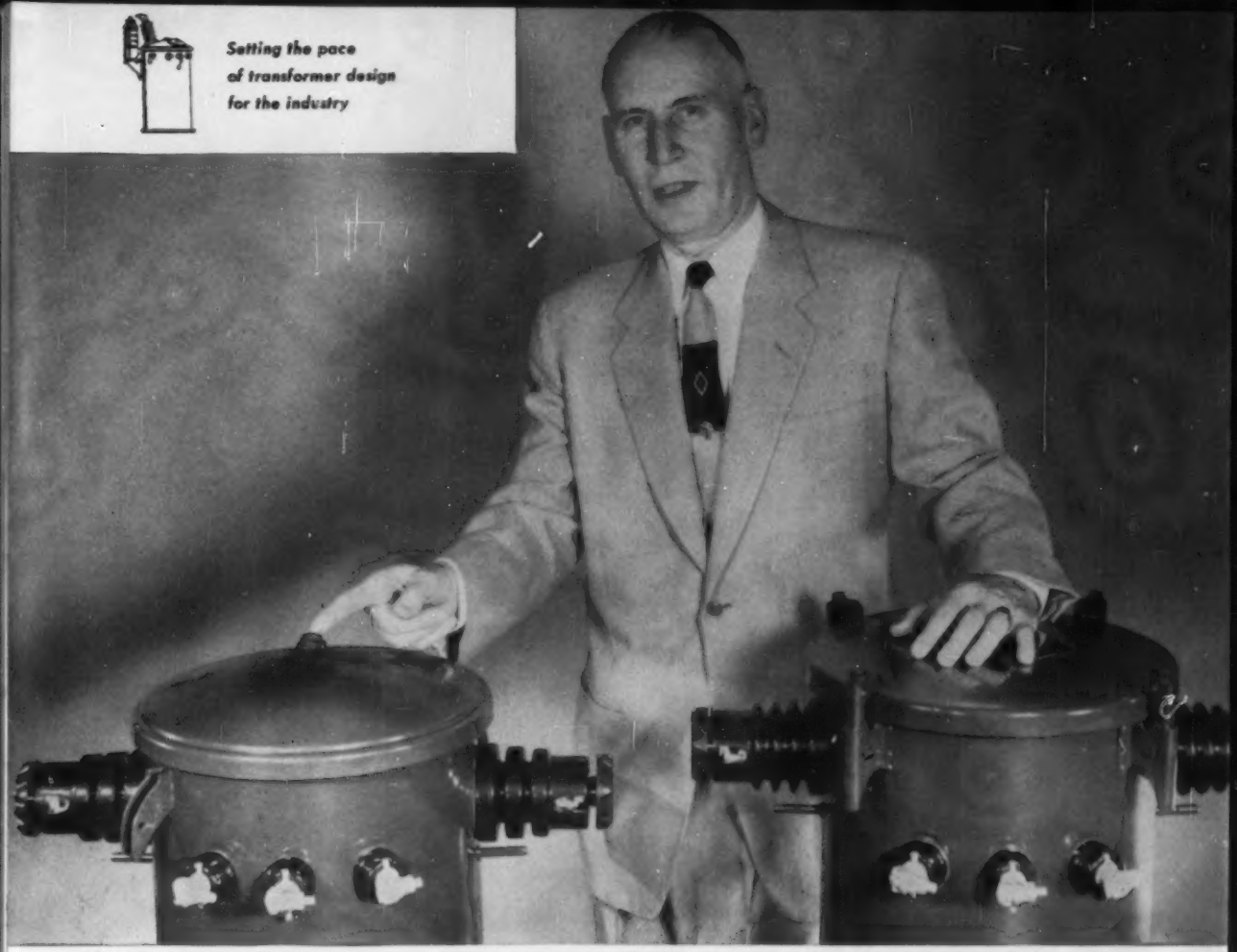
The company's major steam plants are Venice, Cahokia, and Meramec, which with smaller units provide about 1.1 million kw of capacity. This is supplemented by about 300,000 kw from two hydro plants. Union Electric has virtually an unlimited supply of low-cost fuel in its nearby coal fields and burns gas when seasonal prices are advantageous.

Meramec is the newest and most efficient of the steam plants. Last year the company completed the second unit of the plant, bringing total generating capacity to 280,000 kw. Meramec requires 18% less fuel to produce one kwhr of electricity than the Venice No. 2 plant, completed three years ago.

Union Electric has played a major role in contributing to the nation's atomic development. With four other companies it organized Electric Energy, Inc, to construct and operate a 735,000-kw steam plant at Joppa, Ill., to supply AEC's Paducah, Ky., installation.

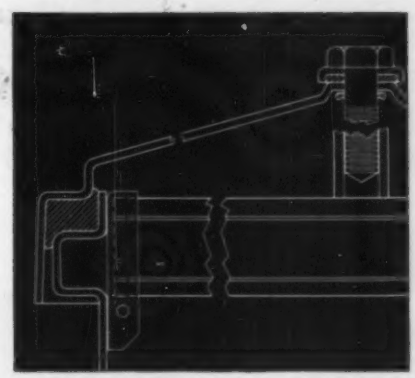
Union Electric has also engaged in another phase of atomic development. Together with four other companies it has formed Nuclear Power Co which is studying nuclear power development under contract with AEC.

Setting the pace of transformer design for the industry



Bob Rung, Distribution Equipment Sales Manager, points out this

FACT: New dome cover combats corrosion, improves sealing, simplifies operation



DOME COVER DESIGN DETAILS

Corrosion licked! Cover hardware eliminated—all threads and clamping members mounted internally, protected from damage and moisture. *Sealing assured!* Gasket is completely confined and held under constant, uniform pressure by spring follow-action of main cover. *Operation simplified!* Single captive bolt provides easier, faster cover removal, as well as exact reassembly.

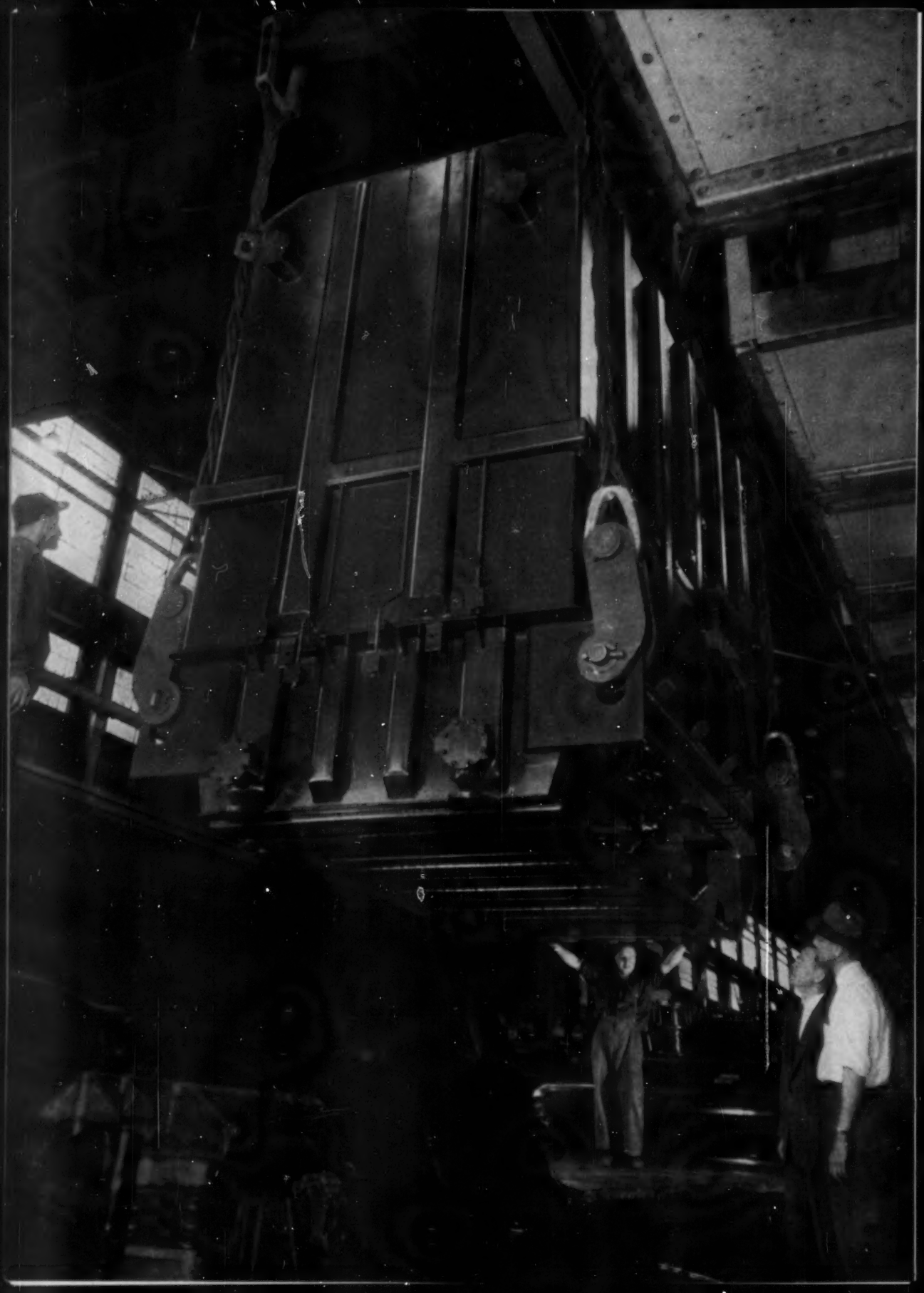
The exclusive dome cover is just one of the many design advances of the new Westinghouse line that add up to more for your transformer dollar.

• • •

Get all the facts today from The Man With The Facts, your Westinghouse Sales Engineer. Or write direct to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70736

YOU CAN BE SURE...IF IT'S

Westinghouse



Helping the industry meet its growing loads

Setting transformer capacity records within practical size limits

The 220,000-kva Westinghouse Form-Fit Power Transformer, shown at left, is, by far, the highest rated unit built to date. Even so, its compact rugged construction permits upright shipment . . . in a single factory-assembled, sealed and tested unit.

Facing the problem of ever-increasing capacity required . . . versus transportation and handling facilities available . . . has been a Westinghouse specialty for years. Form-Fit construction has consistently provided the solution to this problem . . . setting new records in transformer capacity within practical size limits.

Even now, units of 315,000 kva are being built. These, too, will be shipped upright.

Form-Fit construction inherently provides the greatest mechanical, thermal and dielectric margins, thereby assuring the highest quality in the smallest package. This creative engineering has pointed the way to substantial reductions in installation and operating costs for the industry. Research continues with the promise of even greater economies.

Utility management can thus be assured that their increasing load requirements will be met with transformers designed to meet their specific needs with maximum reliability and economy. The adjoining column provides additional facts relating to Westinghouse Form-Fit Transformers. J-97180

YOU CAN BE SURE...IF IT'S Westinghouse

More kva per pound . . . a Westinghouse achievement

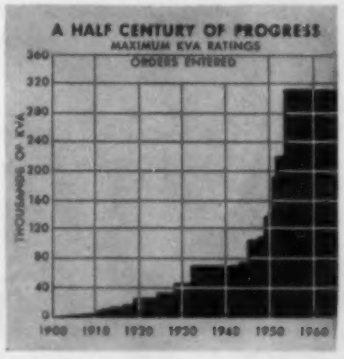
Shown below is a 190,000-kva power transformer shipped upright and intact in 1953. At that time it also led the industry in maximum rating. This is additional, tangible evidence of Westinghouse skill in packing more kva into practical size and weight.

Hipersil®—vital contributor to more kva per pound

Hipersil is a grain-oriented silicon steel introduced by Westinghouse in 1935. This highly permeable material has a distinct advantage over conventional steels in loss characteristics. As a result transformer performance has been considerably improved —over-all size and weight reduced.

Next in line—315,000 kva

In process of manufacture at the Westinghouse Transformer Division, Sharon, Pa., is a 315,000-kva unit which will again be the first of its rating to be shipped intact. This new giant would not have been possible had it not been for many transformer developments which permitted the rapid increase in size of ratings, depicted on the chart below. All were Westinghouse "firsts" for the industry.



For more information on Westinghouse Transformers call your nearby Westinghouse Representative or write direct to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

NEWS ABOUT PEOPLE

Moloney Promotions

Moloney Electric Co has announced these appointments: Chester W. Perkins was named vice president in charge of application engineering and Vice Pres John J. Knox was appointed assistant sales manager.

Perkins, an electrical engineer, joined Moloney in 1947. Prior to this he was with Westinghouse Electric Corp and General Electric Co in an engineering capacity. With Moloney for the past 25 years, Knox was made sales head of the Capacitor Division in 1949.

C. W. PERKINS

J. J. KNOX

Ghen, Cook Are Elevated

Melville W. Ghen has been named superintendent of the newly created line engineering section of Duquesne Light Co's transmission and distribution department. Replacing Ghen as superintendent of operations in the Downtown District of the department is William P. Cook, formerly a district engineer. The new section is a combination of the engineering and construction sections.

Ghen was employed by Duquesne Light in 1921 as a material man. Later he served as supervisor of construction in the Underground Division and superintendent of that division, now known as the Downtown District. Cook, who joined the utility in 1935, also started as a material man. After advancing through various positions, he was named district engineer in 1952.

Both Ghen and Cook have been active in Edison Electric Institute.

M. W. GHEN W. P. COOK

Meiter Made General Sales Manager

William A. Meiter, central sales manager of Worthington Corp, has been promoted to general sales manager. Meiter, who will make his headquarters at Worthington's executive offices at Harrison, N. J., replaces Thomas J. Kehane, who has assumed the sales vice presidency (EW, Jan. 3 p 46). Meiter's successor is Clarence S. Wentworth, manager of the Detroit district office.

W. A. MEITER

Sutro and Stevens Assume New Posts

Malleable Iron Fittings Co, Branford, Conn., has advanced Ogden W. Sutro (left) from sales manager of the Pole Hardware Division to assistant to the president. Albert B. Stevens (right) formerly assistant sales manager was named sales manager of the Pole Hardware Division to replace Sutro.

ROEBLING TELLURIUM ALLOY LEAD SHEATH ASSURES FAR LONGER CABLE LIFE

Structure of Roebling Tellurium Alloy is shown in these Laboratory photomicrographs ... at left, before heat treatment ... at right, after treatment at 400 F. Note that little or no grain growth is apparent after heating. A fine grain size is desirable in regions of higher stress, as in duct splices.

BIGGER LOAD REQUIREMENTS! Higher temperatures! Increased movement of cable during load cycles! Today's best answer to each of these conditions is Roebling Paper Insulated Cable with Tellurium Alloy Lead Sheath*—the Roebling lead alloy that has completely superior resistance to fatigue.

In addition, Tellurium Alloy Lead Sheathed Cable has a lower long-time creep rate...high bursting strength...remarkable stability under heat application as in duct splicing and wiping. And on top of that, it eliminates need for frequent stop joints or reinforced lead sheath...does not require generous expansion bends or large manholes.

Write us now for full information. John A. Roebling's Sons Corporation, Dept. 707, Trenton 2, New Jersey.

*Licensed under Patent 2586095 March 4, 1952 and App. No. 208710, Sept. 9, 1952.

ROEBLING (CF)

SUBSIDIARY OF THE COLORADO FUEL AND IRON CORPORATION

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4501 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1930 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

PENNSYLVANIA
Standard Parts
POWER TRANSFORMERS
save YOU time and money . . .

this transformer saved the purchaser

$1196

3750 Kva, Three Phase, 60 Cycles.
34,400△-4360Y/2520x 8720Y/5040 volts.

Here's another example of money saved and a quick delivery made on a 3750 Kva transformer that qualified as a Pennsylvania Standard Parts Power Transformer. Today, more than ever before, purchasers are recognizing the advantages of ordering transformers that conform to ASA Standards C57.12a. (Transformers covered by these Standards are similar to the Standard Parts Power Transformers that Pennsylvania has been manufacturing for 6 or 7 years.)

The primary advantage of Standard Parts Power Transformers is the fact that savings up to 8% are possible, even if requirements are not quite standard but are within the limits of the C57.12a Standards. That is because the Standard Parts transformer has liberalized high voltage ratings, which give the purchaser an opportunity to buy a standard transformer that meets the specific requirements of his System.

However, if the purchaser desires optional features such as current transformers, disconnect switches, etc., he may obtain them at regular prices and without any price penalty being added to the base price of the Standard Parts transformer.

Standard Parts Power Transformers are available in single phase sizes up to 5,000 Kva, 69 Kv; and three phase sizes up to 10,000 Kva, 69 Kv. Standard Parts Power Transformers can be purchased at worthwhile savings because of quantity production of standard parts produced with adequate tools and equipment. This has improved the quality of the workmanship, reduced the possibility of errors, and permitted more rigid inspection during the various stages of production.

PENNSYLVANIA TRANSFORMER COMPANY
A McGraw Electric Company Division • **Canonsburg, Pa.**

B. W. HANSON

A. A. ARONSON

3 NSP Veterans Get New Sales Posts

Creation of three new positions in its sales department has been announced by Northern States Power Co. Assigned to the newly created posts are these veteran NSP employees: B. W. Hanson, A. A. Aronson, and John Newhouse.

Hanson, sales manager of NSP's Fargo Division, takes over the new position of manager of residential sales. Aronson, supervisor of lighting sales for Northern States Power's St. Paul Division, assumes the post of manager of trade cooperation.

Newhouse, supervisor of the utility's industrial sales, now becomes manager of commercial sales.

J. NEWHOUSE

Dr Hibben Retires from Westinghouse

Dr Samuel G. Hibben, former director of applied lighting for Westinghouse Electric Corp's Lamp Division and a past president of the Illuminating Engineering Society, has retired from Westinghouse after nearly 40 years' service to the lamp and lighting industry.

DR S. G. HIBBEN

Dr Hibben, an international authority on illumination, joined Westinghouse in 1915 as a meter design engineer, advancing to the director's post in 1933. In 1951-52 he served as president of IES, of which he is a fellow, and was its national secretary in 1922-23 and treasurer in 1943-44.

PERSONALS

Columbus & Southern Ohio Electric Co advanced **John W. Leach** from assistant director to director of rates and valuation. The utility's new advertising manager is **Robert E. Boyd,** who joined the company seven years ago . . . **Charles C. Whittelsey,** vice president in charge of Ford, Bacon & Davis' construction activities, was advanced to executive vice president. **William B. Poor,** who joined the firm in 1948, was made a vice president and manager of the firm's construction department and a director of the company . . . **Leo Mauerer,** formerly with Jefferson Electric Co, has joined Hevi Duty Electric Co's Transformer Division as engineering consultant.

Monongahela Power Co's new treasurer is **Erwin C. Withers,** formerly manager of the rating and inspection department. Wither's successor is **Paul E. Davis,** assistant treasurer. **T. J. Ireland,** an assistant treasurer since 1937, also assumes the new title of credit manager . . . **Charles B. Adelmann** has been appointed manager of the East Bay Municipal Utility District's Operation and Maintenance Division. Since joining EBMUD in 1949, he has served as superintendent of the construction and maintenance section.

Appointment of **Ben W. Barclay** as purchasing agent has been disclosed by Central Power & Light Co, Corpus Christi, Tex. Barclay, formerly assistant purchasing agent, replaces **H. C. Loehr,** who will continue to serve in a consulting capacity. Loehr joined the utility in 1916.

OBITUARY

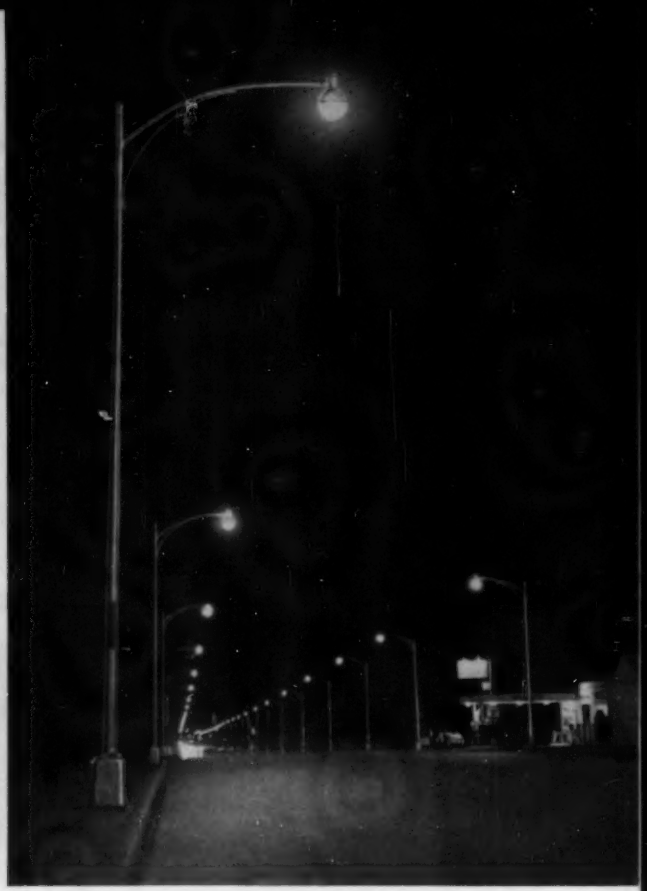
Lewis H. Church, 77, former chief engineer of Thomas & Betts Co, Elizabeth, N. J., died Jan. 5 in Summit, N. J. Church served as chief engineer for a number of years prior to his retirement in 1945.

T. F. Kelley, 67, president of D. S. & O. Rural Electric Cooperative Association, Solomon, Kan., for more than 20 years, died there Dec. 28.

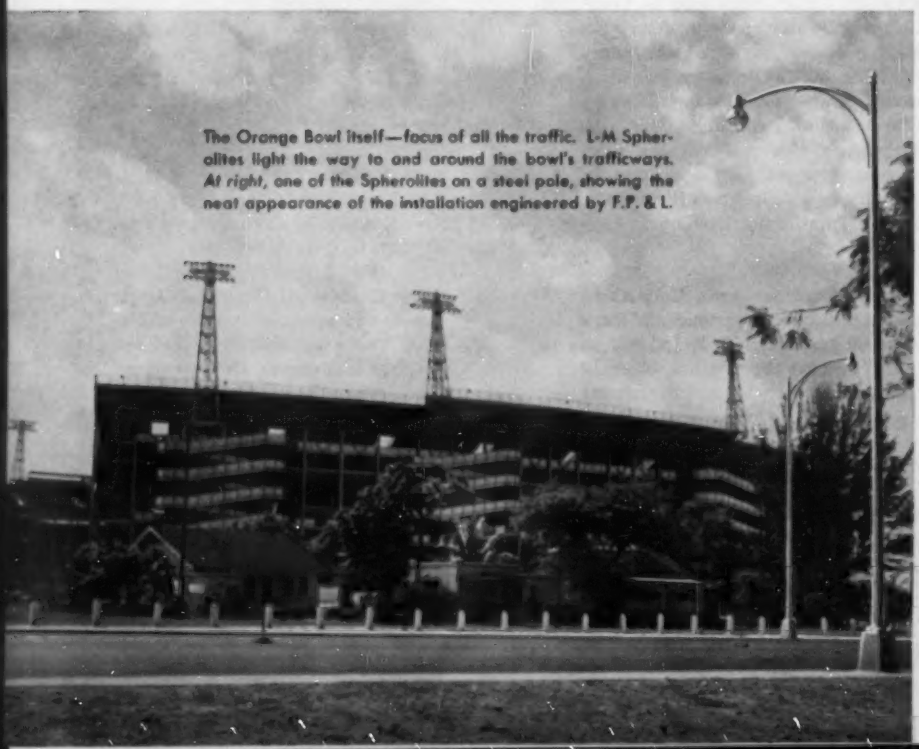
Harry C. Hackett, 69, staff manager of sales and assistant secretary of National Vulcanized Fibre Co, died last month at Wilmington, Del. He served a predecessor company of National Vulcanized and was sales manager and president of National Vulcanized Fibre Co of Canada.

William H. Conklin, 82, retired chief operator of Ohio Power Co's hydro plant at Fremont, Ohio, died there last month. He was chief operator 25 years before retiring in 1941.

North West Seventh Street, leading to the famed Orange Bowl. Normally a heavily travelled thoroughfare, the highway is jammed with cars on game days and evenings. Fast, safe handling of traffic becomes a vital consideration.



Night view from the same location. Well diffused lighting of ample intensity was installed by Florida Power & Light to permit fast movement of traffic consistent with traffic safety. Light is directed at the highway by L-M Spherolites.



The Orange Bowl itself—focus of all the traffic. L-M Spherolites light the way to and around the bowl's trafficways. *At right*, one of the Spherolites on a steel pole, showing the neat appearance of the installation engineered by F.P. & L.

Aerial view of Miami's famed Orange Bowl. The thousands of spectators give an idea of the traffic problem before and after games.

L-M Luminaires Light The Way To Miami's Famous Orange Bowl

Florida Power & Light Company engineers modern installations to provide cities like Miami with better lighting at lower operating and maintenance costs.

Miami's fabulous Orange Bowl has pin-pointed the Magic City's growing traffic problem. Doubling in permanent population since World War II, Miami is also host to tens of thousands more in the fall and winter seasons.

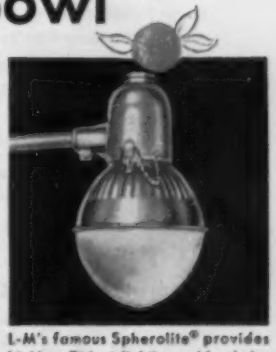
On football nights when the University of Miami Hurricanes play before 30,000 to 50,000 fans, for the magnificent New Year night pageantry, and for the many night high school football games, North West Seventh Street, Miami's newest white way leading to the glittering Bowl, is jammed from curb to curb with traffic.

To meet this critical traffic problem, the thoroughfare was recently equipped with L-M luminaires of 10,000 lumens each and was widened and repaved. Light standards are spaced at 65-foot staggered intervals for almost three miles. Result: traffic flow has been *speeded greatly and safely*, a tribute to sound engineering and planning.

Florida Power & Light Company finds that the installation of modern units such as L-M provides has greatly reduced repair-crew time and replacement cost. With 17,700 street lights in Miami to service, the company can now keep the city better lighted and its crews can cover more territory. Florida Power & Light recently engineered a similar white way installation at Fort Lauderdale, where L-M supplied the 235 luminaires.

The new L-M Spherolites® on Seventh St. were selected because they give maximum light up and down the street, yet provide broad, even areas of illumination. This better lighting increases safety and thus speeds up traffic and helps ease the overloaded traffic conditions.

For details of these and other L-M luminaires, ask the L-M Field Engineer for information, or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).



L-M's famous Spherolite® provides highly efficient lighting, wide choice of light patterns, for incandescent lamps up to 575 watts on multiple circuits, 10,000 lumens on series circuits. L-M also manufactures the most advanced equipment for mercury vapor and fluorescent street lighting, the economical new Uni-Ballast system for series mercury vapor, and the famous CW ballast for multiple mercury vapor. Also available: L-M Street Lighting Application Recommendation Service, to help you get best results from your street lighting.

"Uni-Ballast" is a Line Material Company trademark.

213

LINE MATERIAL Street Lighting

DEEP DEEP GROUNDING

INSURES EXTRA PROTECTION

• Heat treated, alloy steel driving stud resists mushrooming — can be used over and over. Couplings of rugged Silicon Bronze.
• Completely copper-covered machined point speeds driving. All rod sections are threaded on both ends for use as top, intermediate or bottom section.
Permanently Moist Soil
BLACKBURN
Sectional
COPPER BONDED
GROUND RODS

Blackburn Sectional Rods Get Down Into The Permanently Moist Soil

Drive down to permanently moist soil that gives lower earth to rod resistance. Actual experience shows a few dollars invested in deep grounding has saved thousands of dollars in overhead burn-outs.

- **BLACKBURN Sectional Rods have a uniform coating of highly conductive corrosion-resistant copper, molecularly bonded to *rigid steel core*.**
- **Driving studs and couplings interchangeable with all standard sectional ground rods.**
- **Available through Electrical Distributors.**

JASPER BLACKBURN CORPORATION
35 Madison Street • St. Louis 6, Missouri
Phone MAin 1-2821

Distributed on the West coast by KORTICK MFG. CO.

New Source of Hydropower for Idaho

Power will start flowing from three 14,300-kw generators at Albeni Falls project in northwestern Idaho in April. The $31-million multipurpose development on the Pend Oreille River is being built by the Army Corps of Engineers. Powerhouse was completed in August. The concrete gravity dam is 755 ft long at the crest and 83 ft high.

TVA Upheld by Judge in Dispute with Co-op

Tennessee Valley Authority did not breach its contract with the Volunteer Electric Cooperative by supplying power direct to Bowaters Southern Paper Corp at Calhoun, Tenn., Federal Judge Leslie R. Darr has ruled.

Volunteer's complaint, filed in October, 1953, said the contract was breached when TVA refused to provide the cooperative with a requested 17,000 kw of power with which to serve the power requirements of the McMinn County plant. The bill asked that TVA-Bowaters negotiations be halted and co-op be awarded damages.

Judge Darr's ruling in favor of TVA, which was in a memorandum on a TVA motion for a summary judgment, held that the contract itself "recognizes the authenticity of the TVA contract with Bowaters."

The judge said there is nothing in the TVA-VEC contract that specifies the authority can not furnish power to large industrial consumers directly.

VEC's position, the judge held, "would circumvent the true intent of Congress that the cost of power to domestic and rural users be kept at the lowest possible rates . . . and instead would result in the enrichment of a small class of distributors as the plaintiff (VEC)."

Judge Darr said the electric power requirements of the $54-million newsprint mill were "clearly not of the type load being served by the VEC, whose largest customer is one requiring 696 kw."

BPA Construction in 1955

Bonneville Power Administration construction schedule for 1955 calls for a $35-million program for new and improved facilities compared with $40 million for 1954. The agency will center its activity on completion of links to carry new generation at McNary Dam to the Portland-Vancouver, the lower Willamette Valley and southwest Oregon load centers, and the similar high-voltage circuits linking Chief Joseph Dam to centers of Puget Sound and Olympic peninsula.

MEETINGS

Week of Jan. 16-22

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
High Frequency Measurement Conference, Hotel Statler, Washington, D. C., Jan. 17-19.

EDISON ELECTRIC INSTITUTE
Industrial Relations Committee, EEI Headquarters, New York, Jan. 20.

SOUTHEASTERN ELECTRIC EXCHANGE
Personnel Administration Section, Floridan Hotel, Tampa, Fla., Jan. 20-21.

PUBLIC INFORMATION PROGRAM
Mid-Atlantic Region, Seaview Country Club, Absecon, N. J., Jan. 21.

Week of Jan. 23-29

DOBLE ENGINEERING CONFERENCE
22nd Annual Meeting, Sheraton Plaza Hotel, Boston, Jan. 24-28.

***CENTRAL TEXAS MUNICIPAL UTILITIES INSTITUTE**
2nd Annual Electrical Appliance Dealers Conference, Commodore Perry Hotel, Austin, Tex., Jan. 25.

CANADIAN ELECTRICAL ASSOCIATION
Eastern Zone, All Divisions, Sheraton-Brock Hotel, Niagara Falls, Ont., Jan. 25-28.

PACIFIC COAST ELECTRICAL ASSOCIATION
Business Development Section, Hotel California, Fresno, Calif., Jan. 27-28.

Week of Jan. 30-Feb. 5

EDISON ELECTRIC INSTITUTE
Power and Heating Committee, Atlanta Biltmore Hotel, Atlanta, Ga., Jan. 31-Feb. 1; Prime Movers Committee, Grand Hotel, Mobile, Ala., Jan. 31-Feb. 1; Home Service Committee, Washington, D. C., Feb. 4-5.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
Winter General Meeting, Hotel Statler, New York, Jan. 31-Feb. 4.

AMERICAN SOCIETY FOR TESTING MATERIALS
Annual Committee Week, Netherland Plaza Hotel, Cincinnati, Ohio, Jan. 31-Feb. 4.

MISSOURI VALLEY ELECTRIC ASSOCIATION
Industrial-Commercial Sales Conference, President Hotel, Kansas City, Feb. 3-4.

Week of Feb. 6-12

***EDISON ELECTRIC INSTITUTE**
Accident Prevention Committee, Shoreham Hotel, Washington, D. C., Feb. 9-10; Transmission and Distribution Committee, Shoreham Hotel, Washington, D. C., Feb. 10-11.

***PENNSYLVANIA ELECTRIC ASSOCIATION**
Transmission and Distribution Committee, Hotel Roosevelt, Pittsburgh, Feb. 10-11.

*Additions this week.

Changes in Capacity Reported to FPC

PLANT ADDITIONS DURING NOVEMBER

State	Utility	Plant	Fuel	Capacity (Kw)
Me.	Central Maine Power Co	Harris	H	15,000
Vt.	Citizens Utility Co	Newport	IC	3,300
N. Y.	Long Island Lighting Co	Glenwood 3	S	90,000
Ohio	Deshler Municipal Light Plant	Deshler	IC	1,000
Ohio	Cincinnati Gas & Electric Co	W. C. Beckjord	S	125,000
Minn.	Northern States Power Co	Black Dog	S	90,000
Minn.	Madelia Municipal Light & Power Department	Madelia	IC	1,320
Iowa	Hawarden Electric Department	Hawarden	IC	1,060
Minn.	Northern States Power Co	West Fargo (N. D.)	IC	2,760
Kan.	Kansas Gas & Electric Co	Neosho	S	60,000
Kan.	Central Kansas Electric Cooperative Association, Inc	Great Bend	IC	3,100 (Aug.) 3,100 (Sept.)
Md.	Easton Utilities Commission	Easton	IC	2,500
N. C.	Duke Power Co	Riverbend	S	133,000
Fla.	Florida Power & Light Co	Cutler	S	56,470
Fla.	Florida Power & Light Co	Sewannee	S	30,000
Fla.	Tallahassee Electric Department	St. Marks	S	7,500
Ky.	Tennessee Valley Authority	Shawnee	S	135,000
Ky.	East Kentucky Rural Electric Cooperative	Dale	S	20,000
Ky.	Louisville Gas & Electric Co	Cane Run	S	80,000
Tex.	El Paso Electric Co	Rio Grande	S	33,000
N. M.	Plains Electric Generation Transmission Cooperative, Inc	Algodones	S	30,000
Utah	Utah Power & Light Co	Carbon	S	66,000
Calif.	San Diego Gas & Electric Co	Encina	S	80,000
				1,069,110

RETIREMENTS

N. Y.	New York State Electric & Gas Corp	E. Greenwich	H	140
Pa.	Titusville Municipal Electric Plant	Titusville	S	200
Minn.	Carlton County Cooperative Power Association	McGregor	IC	755
Iowa	Hawarden Electric Department	Hawarden	IC	272
Iowa	State Center Light & Power Department	State Center	IC	155
Del.	Milford Board of Light & Water Commission	Milford	S	2,050
				3,572

H—Hydro, IC—Internal Combustion, S—Steam.
United States Capacity as of Dec. 1—Hydro, 22,980,657 kw; Internal Combustion, 2,281,525 kw; Steam, 75,843,835 kw; Total, 101,106,017 kw.

Chicago Plans to Control Traffic Signals by Radio

Plans for a system of radio control of traffic signals have been announced by Chicago. The city said that it will be the first installation of its kind in the world. Federal Communications Commission approval has been obtained and equipment has been ordered for a pilot installation to control signals at 13 intersections.

The pilot installation is scheduled to go in operation in mid-summer.

The radio antenna and transmitter for the new system will be located on top of the Board of Trade Building, the highest point in Chicago. The central control system, located a short distance away, will be connected to the transmitter by an existing underground cable.

At pre-determined times each day, a master mechanism will activate a tone signal. The signal will be carried by the underground cable to the transmitter and broadcast to the lights. In the receiver at each intersection that the signal is intended to control will be a corresponding tone switch, or decoder. Each decoder will select the signal for that intersection and ignore all others.

The tone switch in the traffic light control box will respond to the received tone signal by changing the program (the length of time of green, yellow and red) of the traffic light.

This system makes it possible to control signals at each intersection independently of signals at other intersections if desired. However, the plan is to control signals along a street as a group and for a given driving speed in a given direction. The program of the signals will be changed four times a day to speed traffic during rush hours and to allow for average traffic at other hours.

In addition to pre-determined program changes, accomplished automatically, the radio controls can be operated manually. This will allow the traffic lights to be operated in the most desirable sequence during bad weather conditions.

POWER BRIEFS

● Southern California Edison Co has asked Federal Power Commission for permission to construct a $2.6-million hydroelectric project in the San Joaquin River Basin in Fresno County.

● Los Angeles Department of Water & Power has activated the second 100,000-kw generating unit at its $80-million Valley Steam Plant in San Fernando Valley, Calif. Units No. 3 and 4, each having a 156,000 kw generating capacity, are under way and expected to be finished at the end of this year.

● Utility Expansion Plans . . . During 1955 Consumers Power Co will spend $73 million on construction; Sacramento (Calif.) Municipal Utility District, $16,341,000; Washington Water Power Co, $10,278,000; Delaware Power & Light Co, $4,702,885 for new electric facilities for Delmarva Peninsula; Central Illinois Light Co, $6.7-million program includes addition of 100,000-kw steam turbine-generator unit at R. S. Wallace Station, Peoria; and Commonwealth Edison Co's four-year, $420-million program calls for installation of a 245,000-kw unit at the new Will County, Ill., station.

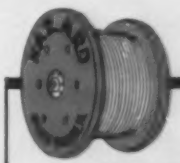
● Southern Nevada Power Co ordered last month a second steam generating unit for a plant located near Whitney which is in the preliminary construction stage. Rated capacity of the first unit is 44,000 kw with second unit expected to have a 60,000-kw capacity. Plant is slated to be completed in 17 months.

and for the same reason: MOLD CURING

Truck tires are tough. Every one of them is vulcanized in a metal mold—mold-cured—to guarantee the brute strength and toughness it must have to lick the rutted pavements, gravel roads, rubber-eating skids and tremendous loads that are part of its day's work. Thorough, uniform curing makes the tire a uniformly rugged "shoe" incorporating the strength of all the individual components.

Hazacord cables are tough, too. Every foot of every tiny flexible cord or heavy high-voltage cable is mold-cured to give service-proved "truck-tire" toughness and durability. Even, thorough curing guarantees a strong, compact cable assembly that adds to the remarkable strength of its components yet retains maximum workability and flexibility. This long-lived construction has made Hazacord the solution to difficult installations where other portable cables have failed after relatively short operating periods.

For any type of portable power distribution in industry, mines or utilities there is a tough Hazacord construction that is best for the job. Ask your jobber or your nearest Hazard representative for details or write for Bulletin H-451, Hazard Insulated Wire Works, Division of The Okonite Company, Passaic, N. J.



2135

HAZACORD

Mold-Cured

portable cables

PRODUCT OF OKONITE RESEARCH

Pepco Cuts 40-Kv Cable Job Costs

J. P. MORAN,
Superintendent, Underground Lines Division, Potomac Electric Power Co, Washington, D. C.

ANDREW C. LAIRD,
Cable Accessories Manager, Anaconda Wire & Cable Co, New York, N. Y.

Several devices and techniques saved Potomac Electric Power Co time, labor, and materials in its recently-completed installation of 40-kv, low-pressure, gas-filled cable. The new installation ties up through transformation to one leg of a previously laid 69-kv gas-filled cable under the Potomac River (EW, Nov. 30, 1953, p 89).

The cable is 3-conductor, 450 Mcm, paper insulated lead-covered and Neoprene jacketed for operation at about 12 psi dry nitrogen gas pressure. It runs from Substation 77, Washington, D. C., to the newly erected Substation 93 which to all outward appearances is a colonial-style house designed to conform with homes in its neighborhood.

This installation will increase service available to an area grown considerably in the last several years, particularly in residential and small-business structures. From Substation 77 at Little Falls Road and MacArthur Boulevard to Substation 93 at Westmoreland Circle, one link in the line will run underground at 33 kv. Another 33-kv leg, tying in at Substation 77 and running overhead, will serve Rockville, Md.

Cable Pulling . . . Pulling 20,000 ft of cable presented few difficulties. There are 16 manholes between Substations 77

1

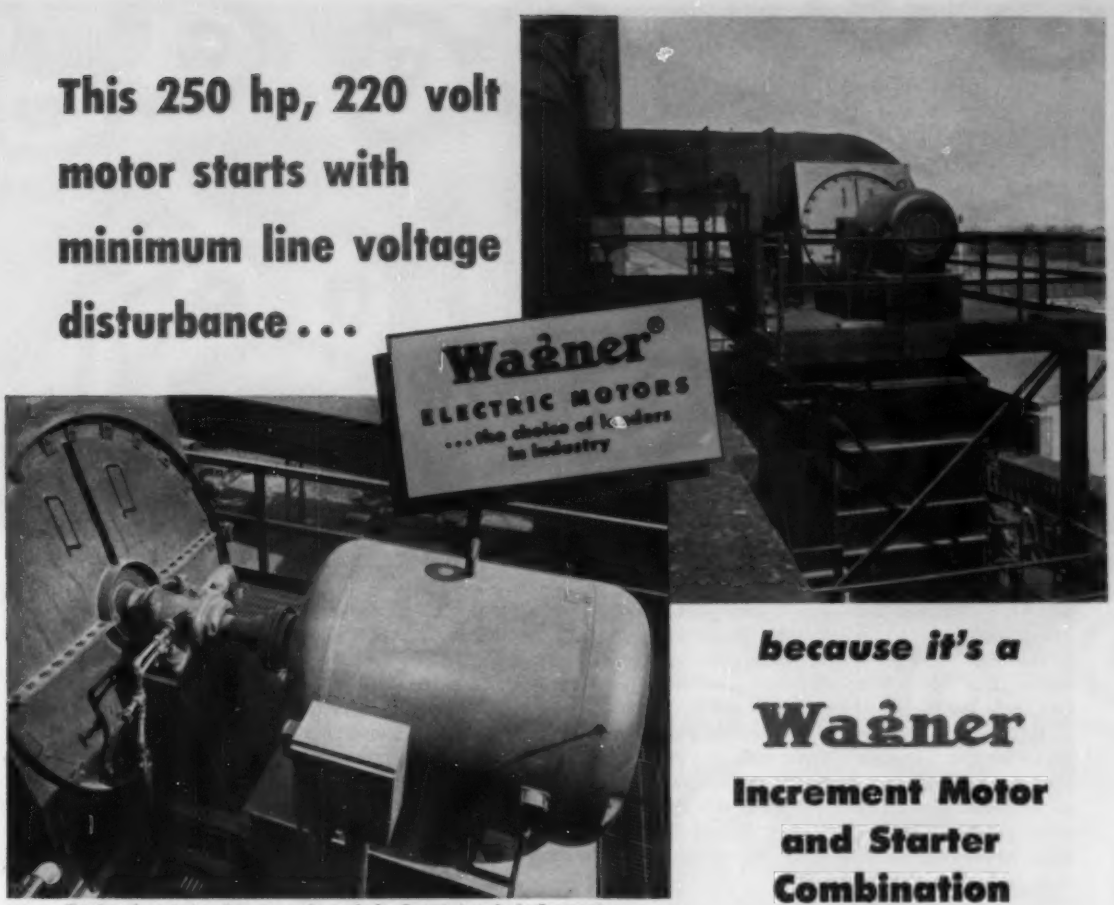
2

1 COLONIAL-STYLE RESIDENCE in back of men pulling last length of cable is Substation 93 designed like houses in its neighborhood

2 CREW FLAGMAN signals to start cable reel turning as crewmen begin pulling the new distribution line into the underground ducts

Story continues on Page 48

This 250 hp, 220 volt motor starts with minimum line voltage disturbance . . .



This fly ash control equipment, on the roof of a Detroit Auto Body Corporation, is powered by a 250 hp, 220 volt, 1160 rpm, totally-enclosed Wagner motor.

because it's a

Wagner

Increment Motor and Starter Combination

Power Companies and their customers *both* benefit when the Wagner Increment Motor and Starter Combination is put on the line because this combination provides an economical yet highly satisfactory method of starting large polyphase squirrel-cage motors in any application where reduced current draw at start is required. No auto-transformers or resistors are necessary.

Voltage disturbances on the line are reduced because the current taken from the line is not broken during the starting period—as happens when auto-transformers or compensator-type starters are used.

Wagner Electric's successful experience in applying its increment motor and starter combination *as a package* for more than fifteen years is your assurance that power company rules will be met. There is no question of divided responsibility as is the case when motor and increment type starter are purchased separately. Their steadily growing acceptance and popularity is proof of their efficiency and dependability.

Wagner two-step motor-starter combinations are suitable for most applications. Three-step, four-step, and five-step motor-starter combinations are available for installations calling for unusually low inrush of starting current or for other special applications.

Wagner Bulletins MU-128 and MU-195 give full information. Send for your copies today.

Wagner Electric Corporation EST. 1891

M55-10

WAGNER ELECTRIC CORPORATION
6456 Plymouth Ave. • St. Louis 14, Mo., U. S. A.
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS - AIR AND HYDRAULIC
BRANCHES IN 32 PRINCIPAL CITIES

3 AT PULLING EYE END foreman watches crewmen take reading on

4 TINNED CONDUCTOR is pressed on with hydraulic press (7,000-

and 93, but steep grades required some permanent anchorage at grade tops to prevent cable from sliding downhill.

Manholes were staggered. Where obstructions interferred with laying them abreast, cables were pulled in one above the other. Beyond manhole No. 13, with 5,000 ft in the ducts and spliced, the crews pulled at about 29 to 30 fpm. Though a faster rate was practicable, 29 fpm seemed sensible if damage to the neoprene jacket was to be avoided. With reels averaging 600 ft cable-pulling crews produced an "empty" every 20 min, fast enough to meet schedules. Standard cable-pulling compounds were used.

Reels and Cradles . . . The reels and the Pepco-designed cradles in which the reels "rode" from yard to site contributed to easier pulling. The reels afforded protection to the gas-filled cable not obtainable with standard reel types and payed off the cable so as to simplify the job. The cradles permitted pulling from rear or side. At the yard these cradles were loaded on a flat-bed lowboy trailer and clamped into position with wire and turn-buckle clamps. The reels were lifted and lowered in place in two cradles. Reel bar collars helped position the reels and kept them from shifting enroute. Time and work saving features of these cradles are:

1. They increase the versatility of the trailer. Pepco can lift off the cradles to use the trailer as an ordinary carry-all.

2. They allow the crew to pull cable "straight line" or at right angles.

3. They permit pulling cable faster, safer, with a greater control over the turning reel.

4. They help keep trailers in motion and useful, except when they are immobilized for pulling cable.

5. They prevent reels from "coming undone" during transit or pulling. Cable can suffer no damage unless the cradle breaks loose.

6. Cradles are completely equipped units down to rollers along the feeding side. Feeding can be carried out over either side since both have rollers.

The cradles justified their investment when many thousands of feet of cable were pulled. Shortest pull was about 272 ft, the longest more than 750 ft. Reels averaged 600 ft. The 750-ft length needed no special handling.

Jointing techniques followed usual procedures. Pepco's practice is to consult manufacturer's specifications, adding to this basic practice whatever experience has proved useful. One "trick of the trade" was use of a lead collar in addition to a staput fairleader for proection of cable at the point where it leaves the duct for jointing in the manhole.

The 10-in.-long collars were taken from the cable when the lead sheath was cut away for the splice. Thus damage to the Neoprene jacket at this vulnerable wear point was minimized. Cable movement abrades the lead sheath before the jacket is reached. Collar supports in manholes are lead.

Although four feeder ducts open into each manhole, only two are in use, the upper two being sealed off until load demand requires their use.

Splicing . . . Pepco crews follow standard practice in making joints. Two splicers and two helpers work each manhole. A joint takes 12 hr to make, including installation of supports between cable hanger and duct, and test. Hangers and arms had been completely installed by a two-man advance crew. Here is Pepco's step-by-step procedure:

1. Supports and collars are fixed in place.

2. Cable is racked with a hydraulic jack and ends laid open for the splice (Lead sheath is put aside for use with duct bushing).

3. The hydraulic press is brought up to round off conductor ends (about 6,000 lb pressure is used).

4. Tinned copper conductor connector is applied with hydraulic press (about 7,000 lb pressure).

5. Copper shield goes over tin-plated compression joint.

6. Over that goes oil-impregnated crepe paper tape buildup to 2¼-in. diameter. About 2,500 ft of crepe-paper tape per joint was used.

7. Then comes a half-lap copper shielding braid.

5 CLOSEUP OF CONDUCTORS shows one phase completed, second half complete, third sanded. Crepe-paper tape will be applied

6 FITTINGS are checked on sleeve of No. 961 feeder. Note solid wall tube connection to internal bypass fitting on copper sleeve

8. Three longitudinal solder seams are laid down across the braid with an iron.

9. Binder goes on over all three conductors (copper shielding braids).

10. One end of solid-wall tube is connected to internal bypass fitting on copper sleeve.

11. Sleeve is assembled.

12. Pasters are applied in preparation for the wipe.

13. Waterbury fittings go on.

14. Pressure test at about 12½ lb checks for leaks (using liquid soap as testing compound).

15. Ground connection is applied to copper sleeve.

Every other day crews were able to move to the next manhole, probably because they had plenty of room for working in manholes, 8 by 15 ft for four feeders and 4 by 15 ft for two feeders.

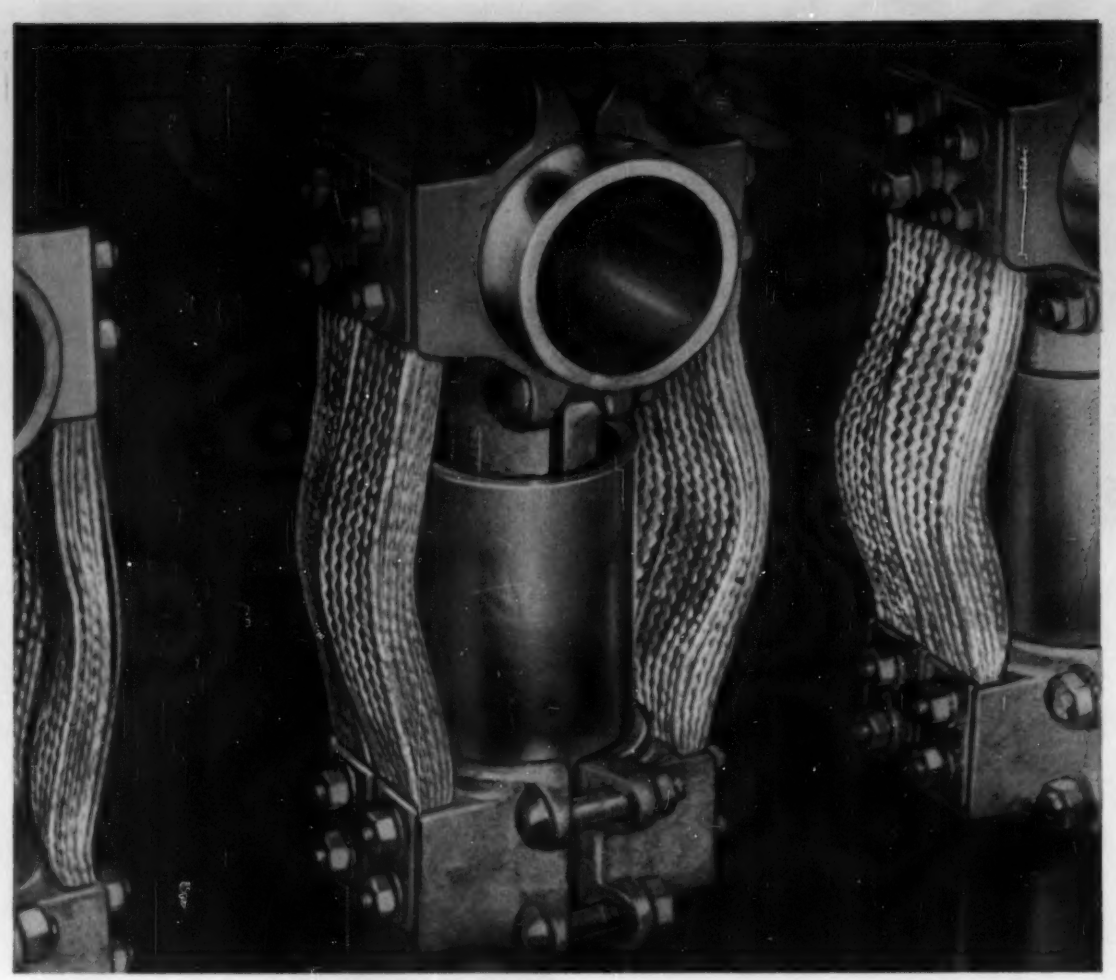
7 SWEATING end of copper tube from cable to end of copper-tube bypass from spreader permits taking pressure readings at any time

Terminations . . . The four cable spreaders and 12 solder-sealed potheads gave no trouble. Pepco preferred the spreader head to the trifurcated joint for higher voltages. This spreader allowed crews to run each conductor directly through the spreader and lead pipes to the single-conductor potheads, the continuous run eliminating short lengths. Moreover, the spreader head permitted quick testing of gas pressure.

The spreader head was placed vertically, and the cable sheath wiped to the lower nipple. Oversize lead pipes were slipped over each cable end to the upper spreader head wiping nipples and sealed with solder. At the terminal end the pipes were wiped to the pothead's lower wiping nipple. Stress-relief cones were built up on each cable where the lead sheath and cable sheathing tape terminated. These are effective in relieving concentration of electrical stress at such points. Cone and shielding tapes were permanently grounded to the interior of the wiping nipple.

The pothead assembly included a "semi-stop" construction inside the lower wiping nipple so that the upper part of the pothead could be filled with oil to obtain higher BIL, and provision was made to limit ingress of oil into the gas-filled cable.

8 SOLDERSEALING by floating solder into wiping nipple completes lead tubing over conductor from terminal top to spreader head



for settling or expansion

BURNDY EXPANSION CONNECTORS ARE ELECTRICALLY BETTER THAN BUS

Even when enclosed and indoors, Burndy flexible connectors carry the full load of the bus without overheating—will run cooler than bus *even on overloads.*

Burndy flexible expansion connectors provide a wide safety factor under the most rigorous operating conditions. Design considerations take into account all geometrical, mechanical and electrical factors—not merely conductivity constants of flexible braid. They include end effect, skin effect, radiation as a function of total surface area, and mutual heating in relation to ventilation and position of connector parts.

The result is a line of expansion connectors—TEES, COUPLERS, ELBOWS, STUD CONNECTORS, BUS SUPPORTS—for all conductors and all applications indoors and out—connectors you can rely on to carry the heaviest loads without trouble or failure.

For catalog or engineering reference sheet with full information on bus expansion, get in touch with your Burndy Representative, or write direct to "connector headquarters": BURNDY—Norwalk, Connect.; Toronto, Canada. *Factories:* New York, California, Toronto. *Export:* Philips Export Company.

It's good business to connect with . . .

BURNDY

51-30

. . . FIRST name in electrical connectors; tools; methods

Contractors Fight TVA Wage Hikes

Soon after new wage rates were announced by the Tennessee Valley Authority, protests began to come from a group of private contractors in Knoxville, Tenn.

In a telegram to Secretary of Labor James Mitchell, the Knoxville Chapter of the Associated General Contractors called TVA's wage action a "violation of the law."

The TVA act specifies the agency must pay the prevailing wage rate in its eight-state area. Counting the increases, TVA's scale is higher in all but two of the 12 crafts for which there is a comparable non-TVA classification.

The group urged the Labor Secretary to order a "prompt hearing" on what it calls TVA's setting itself up as the "authority for the determining of wage rates in the various vicinities in which it does construction work."

In its telegram, the AGC contended that the "TVA has violated the law by negotiating directly with representatives of various labor unions for the establishment of labor scales in excess of the prevailing rates, for which TVA has no legal authority whatsoever."

Aubrey J. Wagner, general manager of the TVA, announced that the board of directors of the TVA had approved wage increases ranging from 5 to 12½¢ an hour for the 9,000 construction workers, effective Jan. 1.

Another 5,000 salaried workers received increases of $100 to $150 a year. Wagner said, however, a few hourly classifications received no increases at all.

"The new rates," the TVA general manager said, "reflect increases negotiated between private employers and unions in the eight-state TVA region during the past 12 months."

The agreements were negotiated at 20th annual wage conference between TVA management and Tennessee Valley Trades and Labor Council which represents 15 crafts.

TVA's Wage Scale (per hour)

Classification	New Pay	Old Pay
Bricklayers	$3.15	$3.10
Boilermakers	2.975	2.90
Carpenters	2.55	2.475
Electricians	3.00	2.875
Iron Workers	2.85	2.775
Laborers	1.425	1.375
Lathers	2.70	2.65
Machinists	2.65	2.55
Operating Engineers	2.85	2.725
Painters	2.575	2.50
Plasterers	2.876	2.825
Plumbers and Steamfitters	3.00	2.90
Roofers	2.125	2.075
Sheet Metal Workers	2.725	2.625
Teamsters	2.025	1.975

INDUSTRIAL RELATIONS BRIEFS

By not adjusting for changes in Social Security law where necessary, employers run the risk of "creating serious inequities within the plan and of establishing a precedent which may cause difficulties in the future," Johnson & Higgins has warned management in its January 1955 issue of its Employee Benefit Plan Bulletin. For copy of this bulletin write: Johnson & Higgins, 63 Wall Street, New York City.

American Management Association will hold its Midwinter Personnel Conference at the Palmer House, Chicago, on Feb. 14-16. One of the unique features of the conference will be an eyewitness actual contract negotiation over a closed-circuit television. You will sit at the bargaining table as the Rogers Corp and the International Brotherhood of Paper Makers–AFL thrash out the terms of their 1955 agreement.

Under a recent election conducted by Association of Professional Engineers and the B. C. Electric Office Employees' Association, 66 engineers-in-training employees of British Columbia Electric Co voted 52-to-9 to be exempted from union membership.

University of California, Los Angeles, is taking reservations for its 1955 Engineering and Management Course which will begin on Jan. 31 and continue through Feb. 11. The course is a two week, 40 hours per week program designed to train individuals for more effective design, installation, or administration of systems coordinating men, materials, machines, and money.

Roy F. Renoud, business agent for Portland, Ore., Local 49 of International Brotherhood of Electrical Workers–AFL, has joined the national staff in Washington, D. C., as an international representative. As an "IR" he will be working again under J. Scott Milne, IBEW president since April 1 and former Portland union leader. Renoud has been business agent for the local, which represents miscellaneous electrical workers, since it was organized March 1, 1948.

Residential Load Will Equal Industrial Load

1954

Here's the most economical way

Use G-E Unit Substations to reduce system investment

Add capacity to handle your steadily growing residential market and do it the most economical way with G-E Unit Substations.

No excess investment is needed because you buy no more capacity than is actually required. That means economy today—plus quick and easy expansion to meet the demands of tomorrow.

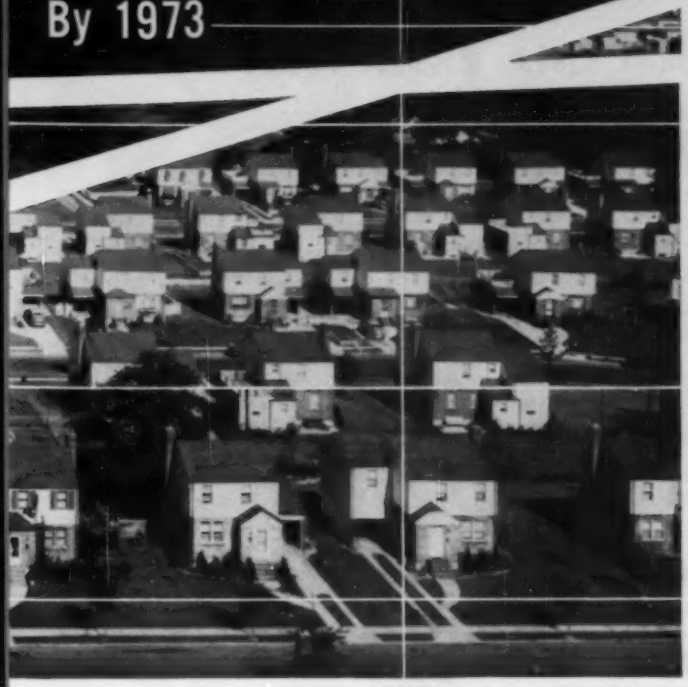
G-E Unit Substations can simplify the problems of expansion as requirements increase. Advance planning and proper substation selection, for example, permit you to expand a radial system into a network system.

Have capacity available when you need it by ordering G-E Unit Substations in advance on the basis of predicted load growth. Then, when your load grows, select sites where capacity is needed and your substations are ready to be installed.

"How to Reduce System Investment" (Bulletin GEA-5847) will help you plan for economical system expansion. It discusses system planning and reveals how other utilities are handling rapidly growing loads. For your copy, write General Electric Company, Section 512-3, Schenectady 5, N. Y.

Progress Is Our Most Important Product

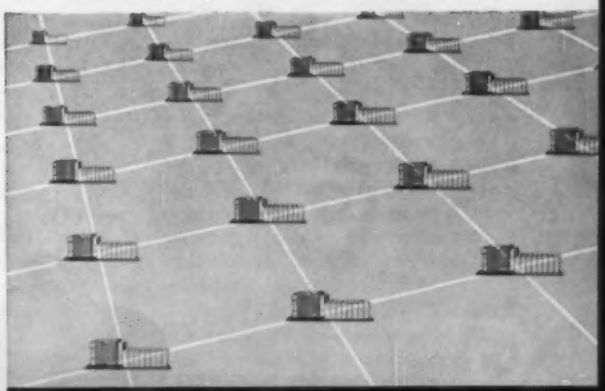
GENERAL ELECTRIC



RESIDENTIAL LOAD IS GROWING rapidly, and is expected to equal industrial load by 1973. Utilities can meet their residential distribution demands yet trim system investment by advance planning with G-E Unit Substations.

to grow with your residential load

LOCATIONS FOR UNIT SUBSTATIONS are "on the mile every mile" to economically serve residential areas. By properly locating small unit substations for expansion into such a system, utilities can economically grow with increasing demands and provide residential customers with economical power and maximum service continuity.



EVERY MILE ON THE MILE

POPULATION GROWTH in the U.S. since 1947 has been 11%—population in the suburbs has grown 43%. Since 1941 the average kilowatt-hours use per residential customer has doubled every 10 years and is expected to double again in the next decade. This fast-growing suburban growth trend has been going on for a long time—is expected to last indefinitely.

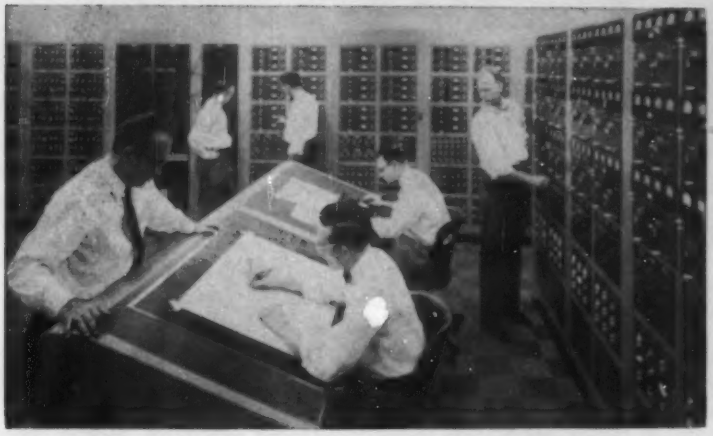
HOW THE SUBURBANITES MULTIPLY

Buy Proved Insulator Performance

...it's WORTH the price!

LOCKE

LOCKE DEPARTMENT
GENERAL ELECTRIC COMPANY
BALTIMORE, MARYLAND



AC NETWORK CALCULATOR is this L-shaped row of cabinets with 36 generators and 668 circuits. Westinghouse engineers operate the "indoor power network" at E. Pittsburgh

Network Calculator is Largest

An ac network calculator, reportedly the world's largest, has been built, installed and put in operation by Westinghouse Electric Corp at its East Pittsburgh, Pa., plant. Dr. E. L. Harder, director of the analytical section, states that the miniature power system can simulate 36 electric generating stations. This quantity is eight more than any other such calculator and 24 more than the first "calculating board" introduced by Westinghouse in 1929. A total of 668 circuits can simulate a power system.

This "indoor power network" is the 26th made by Westinghouse. There are 44 "boards" scattered throughout the world.

More than 30 employees spent 18,400 hr designing, manufacturing and installing the calculator. This instrument has close to 40 miles of wire squeezed into the 90-ft-long row of cabinets. Installed were 1,375 panel lights, 5,287 switches, and 265 meters. Wiremen made 112,474 connections.

To study a system or predict performance of future equipment, the calculator can be used to full capacity of 36 generators or be divided into two separate and complete calculators, of 12 and 24 generator units each. All generators can be operated from the larger of two instrument desks, or each section can be operated from its own desk.

An "accordion" type door between the two instrument desks makes it possible for two customers to rent part of the calculator at the same time, and in complete privacy.

Westinghouse engineers operate the calculator on a rental basis. First electric company to use the sensitive apparatus is the West Penn Electric Co in a study of its five-state network system. W. H. Osterle, system planning engineer, West Penn Power Co, is conducting the study.

Long-Term Contract by Penn Transformer, USW

Pennsylvania Transformer Co, Canonsburg, Pa., and two United Steel Workers' Unions—CIO have agreed on long-term (2 and 3 yr) contracts. F. L. Huber, the company's industrial relations manager, reports:

Two-year contract with production and maintenance workers' local provides for a general increase of 7¢ per hr, and additional insurance benefits, plus an automatic 5¢ per hr increase at the end of one year. There is no provision for reopening negotiations during the term of the agreement.

Three-year contract with electrical testers local provides for an average increase of 5.5¢ per hr, participating in a profit sharing plan, and additional insurance benefits. Negotiations may be reopened at the end of two years for possbile wage adjustments.

Hubbard Expansion

. . . increases productive capacity, warehousing and distribution facilities in major plants

Hubbard & Co, pole line hardware manufacturer, is completing a $1.5 million expansion and modernization program at its three major plants in Oakland, Calif., Chicago and Pittsburgh.

James H. Knowles, president of the 112-year old firm, said "While the major part of our expansion program has been concentrated in Oakland, Calif, to meet the greatly accelerated industrial activity on the Pacific Coast, we are realigning all of our manufacturing facilities throughout the company and expanding our distribution."

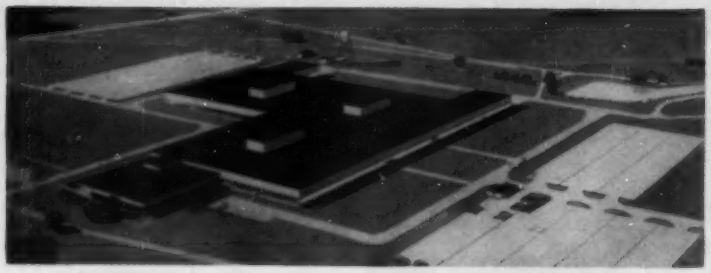
The Pacific Branch at Oakland, Calif., added 40,000 sq ft of floor area including a new building for galvanizing operations and additional room for raw material storage, assembly operations, and a bolt cold-heading machine. Installation of two galvanizing vats, each with a capacity of 70 tons of molten metal, meet Hubbard's present needs and will also provide capacity for galvanizing contracts.

Hubbard's Chicago operations, in nearby Cicero, have been expanded through a new warehouse with six truck ramps to expedite shipping and receiving. Former warehousing space is utilized for a research and engineering laboratory, and further modernization of assembly and machine operations.

"Most of the manufacturing changes in Chicago are being made to provide additional capacity for production of lightning arresters and pole line hardware," Mr. Knowles said.

In Pittsburgh, the company has completed warehousing and shipping improvements, and is making major layout and equipment changes in its pole line hardware manufacturing operations.

Other Pittsburgh improvements include a machine-shop modernization program and installation of new finishing and materials handling equipment in the Hubbard Aluminum Products plant. The latter operation was started in 1951 and has doubled in volume every year.



Leeds & Northrup to Construct New Plant

New control-instrument plant for Leeds & Northrup Co will be built near North Wales, Pa. Here will be produced Speedomax controllers, recorders and indicators, also panels and cubicles. This one-story plant of 254,000 sq ft plus 17,500 sq ft of mezzanine is about 22 miles from Philadelphia. Adjacent are 6.5 acres of parking lot for 900 automobiles. Occupancy is scheduled for the winter of 1955-1956. Approximately 1,300 employees will man the new facility. General offices and the manufacture of heat-treating furnaces, laboratory equipment, and other lines of instruments will be continued in Philadelphia. First portion of the general contract for construction has been awarded. Contract price is about $2.75 million. An architect's view of the plant is shown.

MANUFACTURING BRIEFS

Fairbanks, Morse & Co, Chicago, Ill, has dripproof and enclosed ac motors in latest frame designations and those with double-end shafts have NEMA dimensions in both directions.

Vickers Inc, St. Louis, Mo, has a dc arc welder, Controlarc, a 300-amp, selenium rectifier type with a magnetic amplifier which compensates for line voltage fluctuation.

Foxboro Co, Foxboro, Mass, has a magnetic flow-meter which measures volume flow of liquid with 200 micromhos or more. It is used with a form of ac voltmeter or Dynalog.

The FWD Co (The Four Wheel Drive Auto Co) of Clintonville, Wis., has appointed the Lawrence H. Selz Organization, Inc., of Chicago as public relations counsel. The Brady Co of Appleton, Wis., is the advertising agency for FWD. Announcement was made by R. A. Olen, FWD's president.

General Electric Co Items

● A low-power atomic research reactor will be available for industrial and educational use, subject to applicable regulations of the Atomic Energy Commission. One of its promising and important applications is the detection of minute impurities in nuclear fuels for larger reactors.

● An FM radio-controlled traffic light system for Chicago will be furnished; first system of its kind. Initial contract, approximately $34,000, covers traffic lights at 13 intersections in the heavy traffic area north of the Loop. Installation is expected to be operating in six months.

● A new finish, Melaprene, being applied to subway distribution transformers (1-ph, 167 kva and below), is reported to have up to three times the life of previous subway finishes.

● A multi-million dollar plant will be built at Hendersonville, N. C., to serve as headquarters for GE's Outdoor Lighting Department which is now at Lynn, Mass, and to employ about 600 persons.

● A Federal District Court judge ruled that the company may dismiss any employees (in this case, UEW-Ind) who invoked the Fifth Amendment in refusing to answer congressional inquiries.

● An employee purchasing training course is to be started to help fill the gap created by expanding purchasing functions.

● Lamp Division has opened a full-line company-operated warehouse at 4800 River Road, New Orleans; building also includes Delta Sales District offices, T. C. Lauck, manager.

Federal Pacific's Stock Listed, Building Added

Federal Pacific Electric Co's common stock ($1 par) has been admitted to trading on the New York Stock Exchange. Thomas M. Cole, executive vice president, said that for the fiscal year, ending June 30, 1955, sales should be over $40 million.

A new warehouse has been completed at the Newark, N. J. plant, adding about 35,000 sq ft of floor area. New executive and sales offices are provided on the second floor.

Holden Line in New Hands

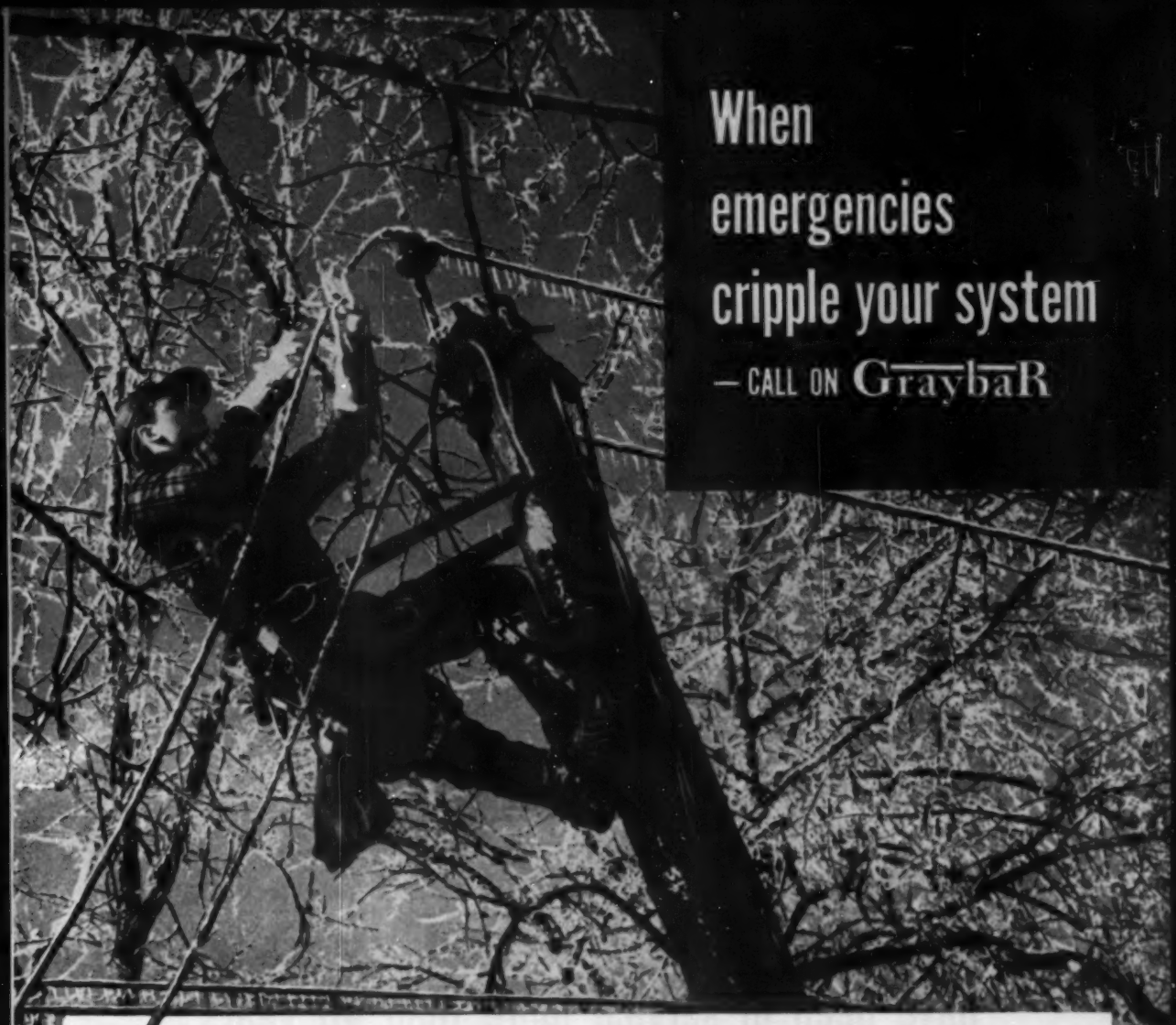
Holden Line Co, Cleveland, Ohio, pioneer in the field of fluorescent lighting, has passed to new ownership and management. Officers of the new firm are Elsworth M. Smith, president; Earl R. Earnest, executive vice-president and treasurer; and Herman L. Vail, secretary. According to Smith, the new management plans to manufacture a line of commercial and industrial fluorescent fixtures.

Simplex Has Submarine Cable History Since '99

Simplex Wire & Cable Co, Cambridge, Mass., only American firm under contract to furnish cable for the first transatlantic telephone cable (EW, Dec 27, 1954, p. 110), manufactured the five miles of cable laid across the Straits of Mackinac in 1899. This cable was then the longest submarine cable of its size.

Electrical World and Engineer, February 3, 1900, described the telephone cable as follows: "The cable is of ten pairs, two pairs of No. 14 B&S and eight pairs of No. 16 B&S gauge. Each conductor contains seven strands and is insulated to 8/32-in. diameter with rubber compound of special high quality for submarine work. Over the cabled conductors are two heavy friction tapes put on in reverse directions, then follow two serves of tarred jute also in reverse, and finally the cable is armored with No. 6 B.W.G. galvanized steel wire."

Of this installation, one circuit was still in use when the cable was retired in 1931, according to the Michigan Bell Telephone Co.



When emergencies cripple your system

— CALL ON GraybaR

Snow, sleet, wind, flood, fire — *each* is a potential crippler of service . . . a forerunner of possible full-scale emergency.

That's why — when elements strike — utilities call Graybar first. From experience, they've discovered Graybar's stand-out facilities for delivering emergency replacement items *fast* — wherever and whenever they're needed.

• A nation-wide network of Graybar offices and warehouses provides ready accessibility to stocks of essential pole-line supplies.

• Experienced, emergency-trained Graybar personnel have the know-how needed to initiate immediate action and efficient follow-through.

• Alert Graybar suppliers are always willing to co-operate in filling extraordinary needs . . . to add their weight to Graybar's own services.

The next time *you* need emergency help, make it a point to call your near-by Graybar office. You're sure to get efficient, helpful service — the kind of service that's invaluable in emergencies . . . a necessity in everyday operations.

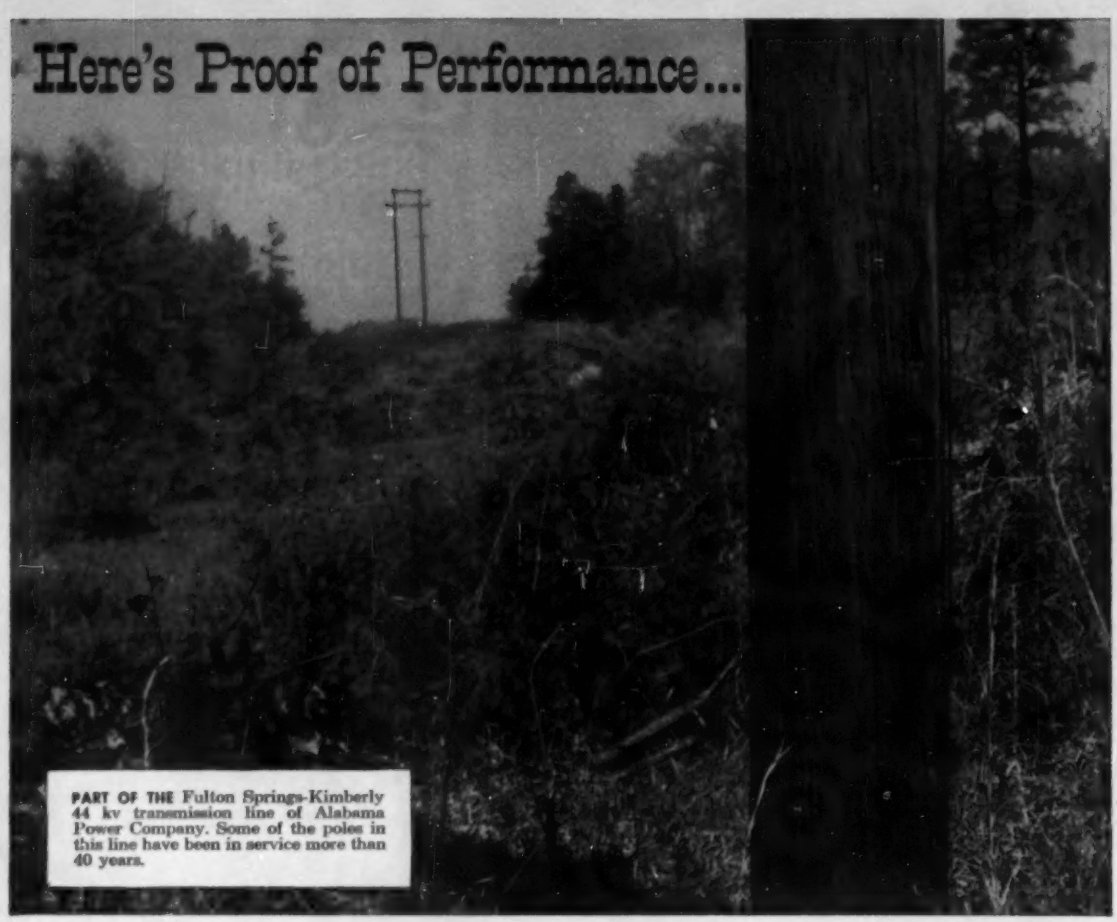
216-91

Call Graybar first for...

GRAYBAR Everything Electrical

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N. Y.

IN OVER 100 PRINCIPAL CITIES



PART OF THE Fulton Springs-Kimberly 44 kv transmission line of Alabama Power Company. Some of the poles in this line have been in service more than 40 years.

Pressure-creosoted poles in this transmission line have been in service more than 40 years

● Alabama Power Company's Fulton Springs — Kimberly 44 kv transmission line today includes more than 100 pressure-creosoted poles that originally went into the ground in their present locations in 1914—more than 40 years ago.

Originally a radial feeder, the line was constructed with approximately 600 pressure-creosoted poles. In 1924, the line was rebuilt with span lengths increased. At that time more than 200 of the original poles were re-used in other locations.

Over the years replacements have been made in the original group of poles, with deterioration accounting for a very small percentage. But 109 of the original poles are still in service on the Fulton Springs-Kimberly line.

Alabama Power Company has been using pressure-creosoted southern pine poles almost exclusively since 1920. With timber and treatment in accordance with current specifications, normal life expectancy from pressure-creosoted transmission poles is at least 40 years.

JUST ANOTHER EXAMPLE

. . . of the effectiveness of pressure-creosoting in lengthening pole life and reducing replacements. And for the best performance from pressure-creosoting, be sure USS Creosote is used. For more information on this effective wood preservative, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS CREOSOTE

9-23

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SAN FRANCISCO AND FAIRFIELD, ALA.

USS

UNITED STATES STEEL

Sell 'Em by Helping 'Em

Detroit Edison's program of cooperation with builders is putting more electrical equipment into better wired homes

New homes—600 of them—are now under construction at a Detroit housing project and every one of them will have a 100-amp service entrance.

The same thing is happening at another Detroit project of 200 lower-cost homes. Entrance switches of 100 amps will provide for 12 circuits with seven installed now.

These and similar successes are the result of a cooperative wiring and promotional program Detroit Edison Co has been developing with home builders in its area. Secret lies in its formula to sell the building trade on electrical homes, by helping them. The company regularly sends editorial material to the builders plus architects and bankers. Included in this has been the series of adequate wiring advertisements published by Electrical World. It also works with builders in sponsoring all-electric homes in various sections of its system.

But one of the most effective ways Detroit Edison has found to get better wiring and more appliances into more new housing is to actually get out and help the builder to sell his homes. In order to get this assistance, the builder must first meet certain minimum electrical requirements. His home must have:

1. Adequate wiring certification.
2. Lighting of good standards.
3. An electric water heater.
4. Other electrical appliances where possible.

Detroit Edison, in return, provides the following promotional assists:

1. A large exterior sign plus numerous smaller ones which plug the home's electrical features.
2. Exterior floodlighting.
3. Display material inside the house.
4. A meeting with the builder's sales personnel to brief them on the home's electrical sales points before it is opened to the public. This is handled by Detroit Edison's salesmen and home economists while a representative of the Electrical Association discusses adequate wiring.

The company so far is happy with the results of its program. Home builders, it says, more and more are finding out that homes, adequately wired and electrically equipped, have a strong appeal to the home-buying public.

New TV Circuit Said To Halve Electric Demand

A new TV circuit said to reduce the operating cost of a television receiver by about 50% and increase the life of its component parts from two to 10 times has been introduced by Emerson Radio & Phonograph Corp.

While power consumption from the electric outlet is nearly halved, says the maker, voltage to the kinescope is stepped up to increase picture brightness. It claims the saving in power reduces temperatures at which parts operate thus increasing their life.

Annual average consumption per TV set at present is 297 kwhr, according to Edison Electric Institute. Color television, however, is figured by most manufacturers to use roughly twice the power of black and white sets. EEI notes, too, that higher brightnesses on TV screens very possibly could increase the desire for more illumination in the room.

S & S Shorts

Slide Rule Gives Light Answers

A home lighting "slide rule," said to automatically produce answers to home lighting problems in a matter of seconds, has been announced by General Electric Co's Lamp Division.

Desired lighting data appears in a special "window" of the home lighting calculator, revealing the right lamp and the right fixture for virtually any home seeing situation. The 4x9-in "slide rule" is now being distributed through trade channels by GE Lamp Sales Districts at 25c each.

Jubilee Sells Ranges

El Paso Electric Co reports 504 electric ranges were sold during its 75-day "Diamond Range Jubilee" promotion as compared to 358 sold in the same period last year. Essay contest, run as feature of campaign, brought 2,331 entries on why electricity is the most modern way to cook. Company awarded ranges to the two persons submitting best entries.

Tougher Appliance Credit

Appliances and television set financing may be tougher this year. At the national credit conference of the American Bankers Association in Chicago recently, some bankers said general business prospects in 1955 are good but increasing competition for the consumer dollar will mean close scrutiny of loans for financing installment sales of appliances and TV sets.

Union Electric Ends Appliance Sales, Repair

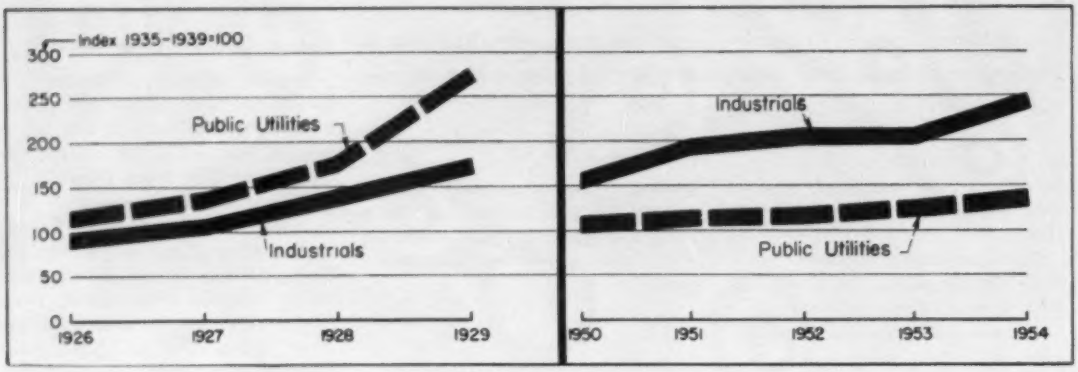
Union Electric Co, St. Louis, is pulling out of retail sales and repair of electrical appliances.

Effective about Jan. 28, it will close five branch stores entirely and discontinue the sale of appliances at all of its other offices.

UE feels that retail appliance dealers at this time are doing an excellent job of selling electrical appliances and that its own merchandising operations represented only a minor part of total appliance sales. It notes that since the war, more customers have been paying their bills by mail and by using its more conveniently located pay stations. This has resulted in fewer bills being paid at the suburban branch stores. The company suspended merchandise sales during the war and post-war scarcity period, but resumed the operation in 1950.

There will be no change in the company's sales promotional program on behalf of dealers and distributors and others selling electrical goods.

ELECTRICAL BUSINESS OUTLOOK



FRB Credit Control Curbs Utility Stocks

When the Federal Reserve Board raised margin requirements, it didn't do the market for utility stocks any good. The Board's action shows that it's concerned about the stock market. And it may take further steps to keep speculation under control. That's why stocks tumbled last week.

Not Much Speculation in Electric Shares . . . Not that there's much speculation in electric utility shares. Unlike the 1920's (see charts), when utilities were speculative favorites, utility stocks today are the favorite of conservative investors who hold for the long pull. That's why utilities haven't moved up as fast as other stocks in the recent speculative boom. And they won't be sold off the way they were after 1929, if the market breaks.

There are two reasons for this:

1. The power industry is different today. Holding companies without real assets, watered stock, over-va'ued plant—all those extremes of the '20's are gone. Both holding companies and operating companies are now managed very conservatively under strict regulation.

2. More investment funds today are in the hands of large institutions: insurance companies, pension trusts, and banks that manage personal trust funds. Such institutions are heavy purchasers of electric utility stocks. They are adding to their holdings steadily and make very few sales, since their objective is steady dividend income.

But despite these strong factors, the market for utility stocks does suffer when the Federal Reserve tightens credit. This is because prices for utility preferred and common stocks move in line with bond prices. In other words, their yields move with interest rates.

If the FRB tightens credit generally in an effort to halt stock market speculation, it has usually meant higher interest rates, lower bond prices and lower prices for utility stocks. Interest rates are already inching up. And this is one of the things that has kept utility stock prices from booming like industrials. The market is anticipating tighter credit.

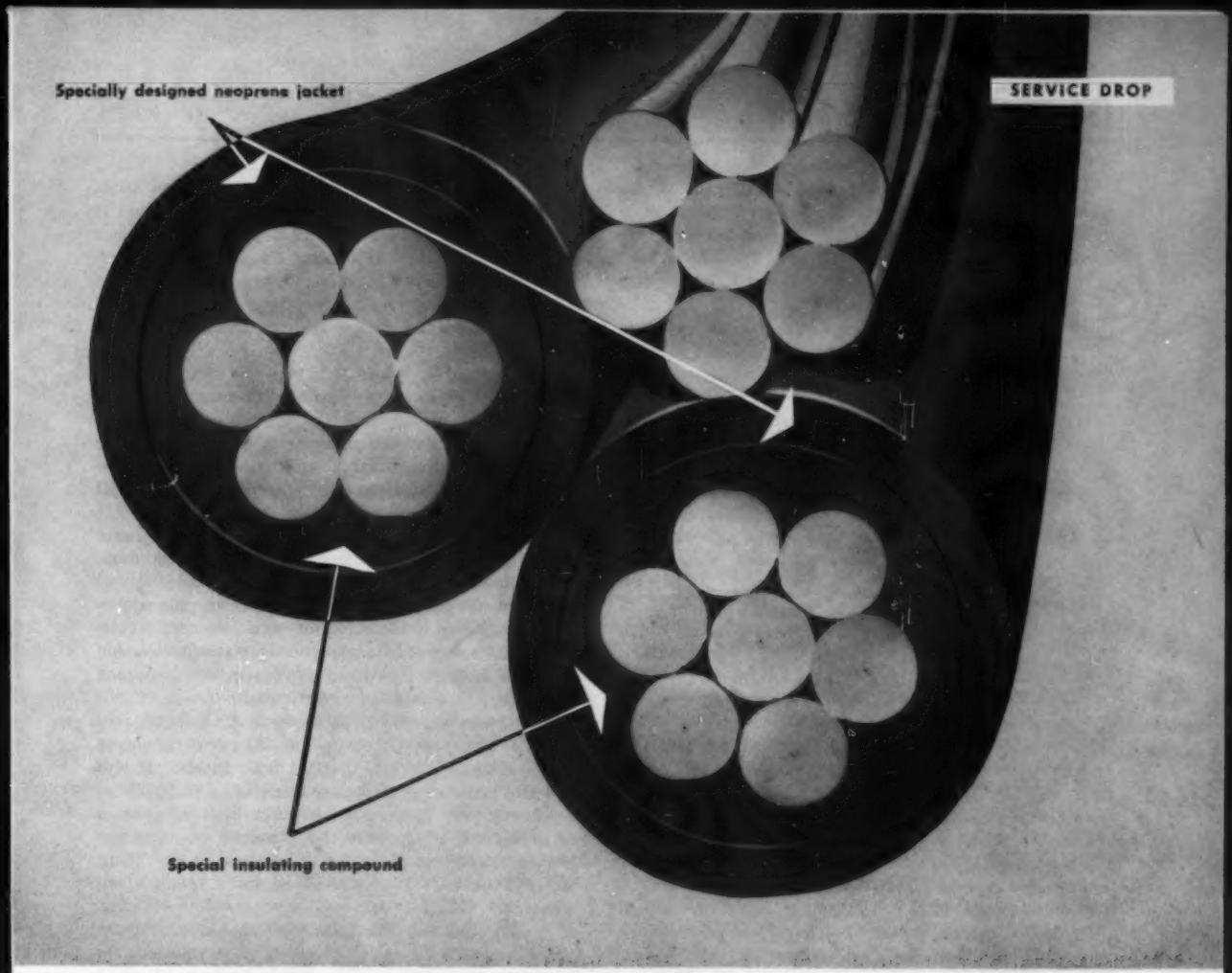
No one knows how much interest rates will go up in 1955. It depends on how fast the business boom gets rolling, as well as on the stock market. But few observers expect the Federal Reserve to take really drastic steps.

As business picks up, the Federal Reserve may want to tighten credit in order to prevent inflation—not just in stocks prices but in the economy in general. But the last time it did this—in early 1953—it was accused of rocking the economic boat, helping bring on a recession. The chances are that it will be a lot more cautious this time.

Then, too, the supply of funds for investment is very large. So a relatively good market for new utility issues seems assured although there seems little chance of selling at prices as favorable as in the late '20's.

Favorable Factors . . . For the longer term, there are several favorable factors to support the market for new utility shares. National income is growing, which means there will be more savings to invest, and the proportion of total savings made through institutions is increasing too. It's the institutions that favor utility stocks.

And as national income grows, there's also a good chance (in 1956 and later) for lower corporate and personal taxes. This would increase utility earnings available for dividends, and also make dividends worth more to the stockholders. People will buy more stocks and pay higher prices if the tax on dividend income is lower.



TWO-WALL CONSTRUCTION, unique with ANACONDA 2+2 Type N-SD cable, gives high mechanical and electrical service reliability.

New 2+2 N-SD Cable gives double protection

ANACONDA 2+2 Type N-SD service drop is designed to out-perform other N-SD cable—both electrically and mechanically.

Its conductors are covered with not one, but two, precisely formulated compounds. Each layer is built to do a single job best.

The inner layer is a high-grade rubber insulation . . . with excellent electrical properties and high heat and moisture resistance.

The outer layer is a tough, durable neoprene jacket . . . best for wear and weather resistance.

Together these two layers give 2+2 cable outstanding service reliability. Your Anaconda salesman or distributor has full details. Call him today. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

ANACONDA®
ALUMINUM AND COPPER WIRE AND CABLE

ANACONDA 2+2 TYPE N-SD CABLE: lightweight . . . sturdy . . . easy, fast to install . . . free-stripping, clean to handle . . . neat.

IN THE INDUSTRY

Racketeers Gave the Industry a Black Eye at Joppa

Attorney General Herbert Brownell, Jr, called it "... the biggest thing of its kind since the Brown-Bioff syndicate in Hollywood extorted more than $1 million from the movie industry nearly two decades ago."

The New York Daily News opined that it "smells like treason."

The prosecutor in the case told the jury, "It's high time you serve notice that blackmail is not going to work."

These remarks help to describe the racketeering that plagued and hampered free enterprise in building the giant steam station at Joppa, Ill., to serve power to the Atomic Energy Commission. The story of extortion, attempted extortion, and payoffs were unfolded before a federal court in St. Louis last month in a case resulting in a heavy prison sentence for one labor boss and a $2,000 fine for another.

Wouldn't Give In . . . Testimony in that case, which gained no more than passing notice in the newspapers, should help to set the record straight on one of the industry's heroic efforts to serve the nation. Evidence in the case shows that the industry would not give in to the kind of shakedown which the two labor bosses had sought.

Immediate importance of the case and the verdict which followed is that it helps to explain the costly delays in construction suffered by Electric Energy, Inc, which is building the project, and Ebasco Services, Inc, which did the actual construction work on the initial phases of the project. Federal power advocates, several labor organizations among them, have pointed to the Joppa situation as evidence that private industry is not capable of economically and expeditiously building tremendous power plants. This argument has been frequently used against the contract under which Middle South Utilities, Inc, and the Southern Co are to build a plant at West Memphis, Ark., to serve AEC.

But the extortion case in St. Louis supplies the sworn testimony to refute thoroughly the argument. Here is the gist of the case:

From the very beginning in 1951 a continuous series of work stoppages kept construction of the Joppa Plant at a snail's pace. Ebasco brought in its most skilled labor relations men in efforts to iron out disputes, keep the job on schedule. But Evan R. Dale, southern Illinois boss of the AFL Laborer's union and a leader in state Republican politics, controlled the labor situation in that area.

Price of Peace . . . While Dale was too smart to make direct threats to Ebasco, he nevertheless managed to convey the impression that the price of labor peace was 1% of Ebasco's $103,000,000-contract.

One Ebasco subcontractor testified that he paid Dale $7,500 in return for promises of labor peace and that he experienced few labor difficulties.

Another subcontractor testified to paying a lesser amount to the labor racketeer on the same conditions.

But Ebasco and its client, EEI, decided against giving in to the monstrous shakedown. The labor stoppages continued—adding up to some 143 during a 26-month period. Not all of these were traceable to Dale's influence, but the 38,000 laborers that he controlled in the area took part in many of the strikes and stoppages.

The evidence was enough to convince the St Louis jury that Dale was guilty of obstructing interstate commerce by attempting to extort $1,030,000 from Ebasco. It also found him guilty of racketeering in extorting $7,500 from the subcontractor. James Bateman, business agent of a local pipefitters' Union, was also convicted of attempted extortion but not on the count of receiving money. Sentence for Dale was 15 years in prison and a $10,000 fine, for Bateman, a $2,000 fine.

In passing sentence, the presiding judge said of Dale, "Dale has been disloyal to the men he represented. He has been responsible for an increase in the costs of public and private works in southern Illinois amounting to millions of dollars."

It is clear that the indictment and conviction of the two labor bosses is no general indictment against unions. It was the action of Dale that gave the electric industry a black eye at Joppa, but a black eye lasts only a brief time.

TECHNICAL NOTES

Fabrics are effectively waterproofed by application of compounds containing zirconium acetate.

Fluorescent lamp life depends more on the number of starts than on the actual hours burned.

Energy of tidal friction on coastlines and ocean beds slows the earth's rotational velocity to the extent of one day in 7,200 years.

Successful underground gasification on an economically feasible basis would satisfactorily solve the problem of high-ash, high-moisture coal, particularly in thin seams.

Polyethylene and polyvinyl-chloride coverings extruded over the lead sheath of cable are mechanically tough, waterproof, electrically high resistant, microbiologically inert and present a smooth surface for pulling.

Current rating of convection-air-cooled selenium cells is based on a normal current density of 0.32 amp for each sq in. of active rectifying surface for a single-phase, full-wave bridge rectifier stack operating into a resistance load.

Failure of aluminum connectors on both aluminum and copper conductors has at times been traced to overstressed bolts.

Colorado Utility Gets Rate Hike

Public Service Co of Colorado has received $1,529,599, or 39.4% of the $3,879,000 electric rate increase originally requested. The Public Utilities Commission delivered its decision on Dec. 17. Hearings had begun on May 4.

The increase was reduced further by the substantial reduction in the company's gas rates amounting to $961,422. A summary of the proposed increases requested and those granted are shown in the box below. The PUC noted in its statement that the proposed increase by the company was the first since its incorporation in 1924.

J. E. Loiseau, PSC president, commenting on the rate case, said his company was "seriously disappointed" by the order. He declared "We feel the earnings allowed are totally inadequate to meet the increased costs of operation and taxes brought about by the inflation, and to compensate for new and additional investment amounting to more than $20 million annually which we have been making in the past and must make in the future."

With regard to rate base findings, the company in its presentation introduced as evidence the original cost of the plant, reproduction cost new based on spot prices and, finally, the reasonable value of the plant for rate-making purposes. The net original cost of the electric department as claimed by the company amounted to $116 million, reproduction cost new at $175 million and reasonable value at $135 million, or 16% above net original cost.

The PUC, in dismissing all evidence value, found that based on its own prior decision it could "fix the valuation of a public utility's property as its original cost, less depreciation . . ."

The PUC found that the net original cost rate base of the electric department to be $114 million. However, this finding was for a "year end" rate base and included construction work in progress in the amount of $9,766,955, and utility plant held for future use in the amount of $178,198. While this amount is small its inclusion is significant. On the other hand, the addition of construction work in progress to the rate base does not increase the amount available for return since as an offset both the company and the commission included interest charged to construction as a credit to income. While the utilities commission also allowed materials and supplies it disallowed cash working capital under the theory that the company had available to it tax accruals which could be used for that particular purpose.

J. E. LOISEAU

The PUC also disallowed a small amount of electric plant acquisition adjustments on the grounds that—

"While it is true that the commission has jurisdiction of the purchase and sale of the physical assets of utilities under its jurisdiction and would not approve any transaction not consistent with the public interest, we still do not feel it necessary to include this account in an original cost type rate base. We have permitted this company to recoup the amount of money in this account by amortizing it over a period of 15 years. (In the matter of the Original Cost Study of Public Service Co of Colorado, Case No. 4693, Decision No. 41682 of Dec. 9, 1953). Applicant will not be penalized by the treatment accorded it herein, but to include it in the rate base would, in our opinion, place an undue burden on the ratepayer. Accordingly, we will disallow the plant acquisition adjustment."

As to the treatment of certain operating expenses, the PUC men-

Summary of Rate Increases Requested and Granted

Department	Gross Revenue Increase Requested	Granted
Electric	$3,879,000	$1,529,599
Steam Heating	43,000	23,400
Gas	*(173,000)*	*(961,422)*
Total	$3,749,000	$591,577
Rate of Return	6.75%	6%

Italics denote decrease.

tioned the accounting treatment it had prescribed for the Accelerated Amortization of Emergency Facilities in the company's electric plant. It said:

"This commission, in Application No. 12631, Decision No. 41748, of date Dec. 15, 1953, specified how this company should handle this particular matter. We see no reason at this time to change any of the procedures set forth in the above application. The matter in which the company has handled taxes and depreciation expense herein as a result of its Certificates of Necessity will not affect these items for rate-making purposes. Accordingly, no changes are necessary in this proceeding as a result of Section 124A of the Internal Revenue Code."

The above statement is significant since the order prescribed "normalized" taxes and restricted surplus accounting for the tax deferral.

As to the rate of return, the company's petition for a return of 6.75% was reduced to 6% by the PUC.

FINANCIAL BRIEFS

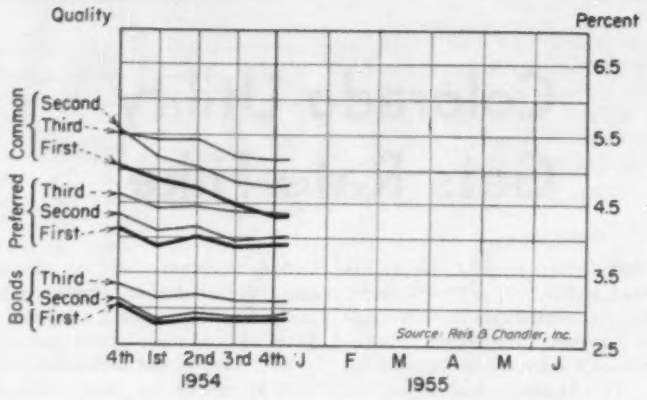
The firm of Jay Samuel Hartt, consulting engineers, has been merged under the name of Middle West Service Co. Offices will be maintained at both 327 South LaSalle St, Chicago, (Hartt's address) and 20 North Wacker Drive (Middle West's address) until April 1955. Thereafter all business will be conducted at 20 North Wacker Drive.

Toledo Edison Co has inaugurated a new system of accounting called "Responsibility Accounting." Under the new system, all levels of supervision will receive truly comprehensive reports of their expenditures. For the first time, the budgeting and accounting systems will be integrated so that a department's activities will be budgeted, its costs accumulated and reported according to natural work operations.

West Penn Electric Co stockholders will vote at a special meeting on Feb. 15 on a proposal to split the common stock 2-for-1.

City of Philadelphia, Pa., is planning to spend $500,000 annually for the next ten years on street lighting.

YIELDS (%)



	BONDS			PREFERRED STOCKS			COMMON STOCKS		
QUALITY.....	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Jan. 6.....	2.89	2.93	3.11	3.93	4.07	4.37	4.36	4.80	5.18
Dec. 30.....	2.89	2.92	3.10	3.93	4.04	4.37	4.34	4.75	5.16

Utility Earnings

COMPANY	PERIOD MONTHS	ENDED	NET INCOME 1954	NET INCOME 1953	EARNINGS PER COMMON SHARE 1954	EARNINGS PER COMMON SHARE 1953
Arizona Public Service.....	12	Nov.	$4,641,000	$3,755,000	$1.46(a)	$1.21(a)
California-Pacific Utilities	12	Nov.	626,335	586,572	2.13(b)	2.09(b)
Dallas Power & Light.....	12	Nov.	6,161,734	5,078,039	....	....
Minnesota Power & Light.....	12	Nov.	3,519,607	3,980,100	1.71	1.98
Montana Power and subsidiaries	12	Nov.	7,583,882	7,383,729	2.61	2.59
Public Service Co of Indiana...	12	Nov.	12,167,926	11,694,007	2.37	2.34

Notes—(a) Based on shares outstanding at the end of period, and (b) Based on 234,878 shares in 1954 and 228,839 shares in 1953.

Utility Financing

COMPANY AND DESCRIPTION	AMOUNT OF OFFERING (000)	OFFERING PRICE	YIELD TO PUBLIC
WEEK OF JANUARY 6-12			
BONDS AND DEBENTURES			
Duke Power—1st mtg 3% due 1975.....	$40,000	100.751%	2.95%
Commonwealth Edison—conv. debs 3¼% due 2004....	50,000	100.00	3.125
COMMON STOCK			
Duke Power—218,737 sh (being offered commonholders on 1-for-20 basis, record Jan. 12 to expire Jan. 28, no underwriting).....	$8,749	$40.00	5.00%
SCHEDULE FOR JANUARY			BID DATE
BONDS			
New England Power—1st mtg due 1985.....	$25,000	.....	Jan. 18
Consumers Power—1st mtg due 1990.....	30,000	.....	Jan. 25
Los Angeles, Calif., Department of Water & Power electric plant revenues.....	18,000	.....	Jan. 26
PREFERRED STOCK			
Duquesne Light—160,000 sh $50 par.....	$8,000	.....	Jan. 20
Toledo Edison—100,000 sh $100 par cum.....	10,000	.....	Jan. 18(a)
Public Service Electric & Gas—250,000 sh $100 par	25,000	.....	.....(b)
COMMON STOCK			
Duquesne Light—450,000 sh.....	$.....	.....	Jan. 17
Toledo Edison—400,000 sh.....	.....	.....	Jan. 18

Notes—(a) First Boston Corp—Collin, Norton & Co group, underwriters; (b) Postponed.

One company

One company launched the aluminum industry.

One company has 67 years of aluminum research and production experience.

One company has 57 years of technical and field experience with aluminum conductors.

One company maintains the outstanding research, development, testing and production facilities in aluminum conductors.

One company has developed and improved aluminum conductor alloys and aluminum conductor designs.

One company manufactures and stands behind a dependable line of both aluminum electrical conductors and accessories.

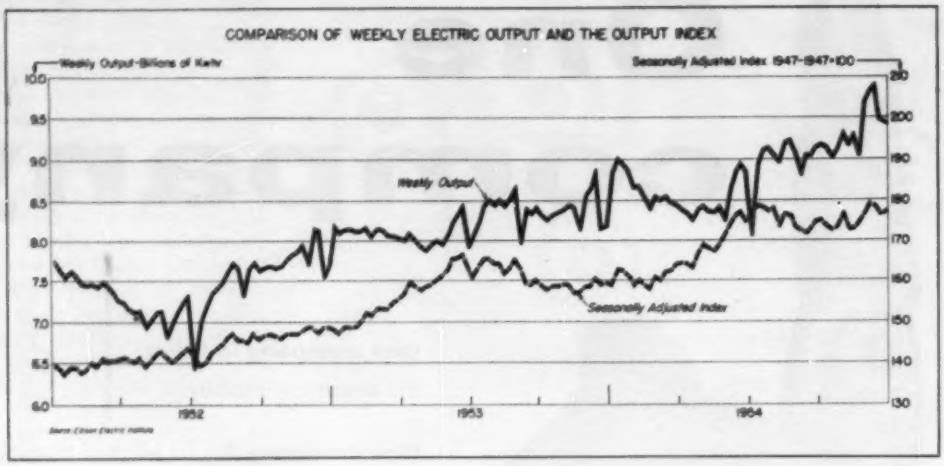
One company maintains a complete headquarters and field engineering staff to assist those who transmit and distribute electric energy.

This one company is

ALCOA **ALUMINUM**

ALUMINUM COMPANY OF AMERICA

STATISTICS

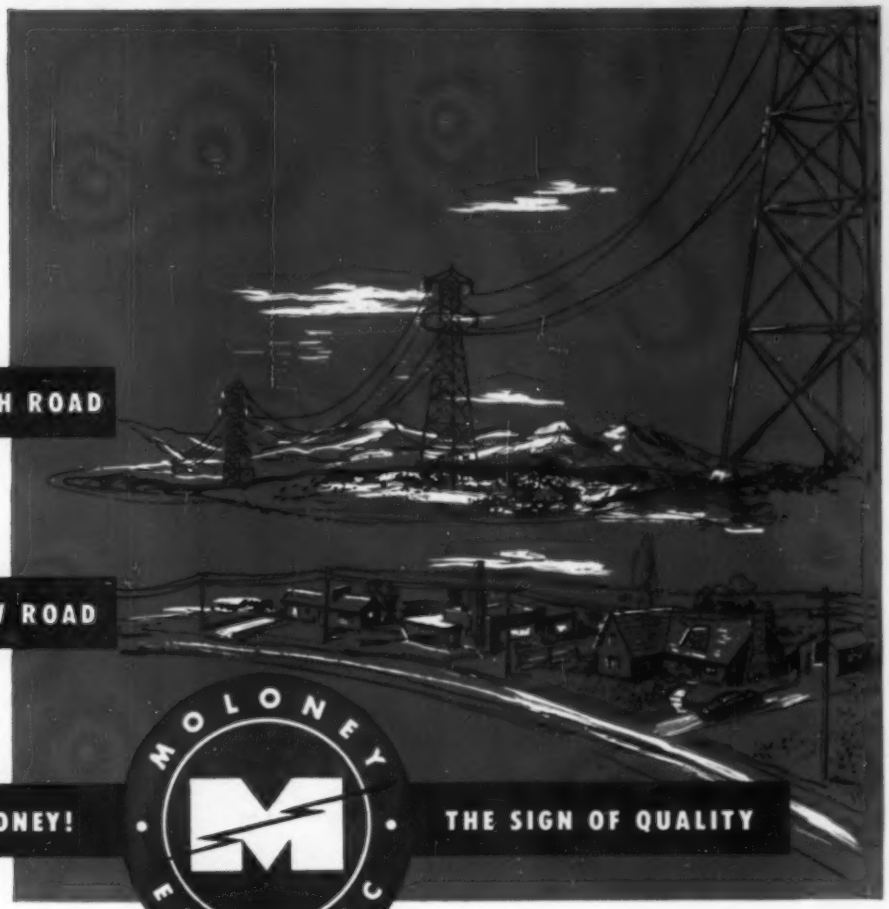


Power Statistics . . .

		Latest Month	Preceding Month	Year Ago	Annual Change %
Capacity	Oct.	100.01	99.16	88.62	12.9
Peak—Class I Systems (million kw)		79.9	79.4	74.0	8.0
Estimated Dec. '54 Peak (million kw)		87.8	87.8	91.0	− 3.5
Production—billion kwhr	Oct.	40.46	39.55	37.66	7.4
hydro		7.83	7.80	7.16	9.3
fuel		32.63	31.74	30.50	7.0
Sales—billion kwhr	Oct.	33.75	34.05	32.21	4.8
residential		9.70	9.76	8.70	11.5
commercial		6.40	6.69	5.62	13.9
industrial		15.24	15.00	15.56	− 2.1
other		2.41	2.60	2.33	3.4
Fuel Consumption	Sept.				
coal—million tons	Oct.	10.34	9.73	10.22	1.1
oil—million barrels		5.32	4.90	6.78	−21.6
gas—billion cu ft		108.49	118.62	118.62	− 8.5
Net Income Class A & B Co's—$ million	Oct.	86.92	92.41	75.62	14.9
Residential Customers—millions		42.95	42.84	41.79	2.8
revenue per kwhr	12 mos.	2.70¢	2.70¢	2.75¢	− 1.8
avg kwhr per customer	ended	2,512	2,496	2,317	8.4
avg annual bill	Oct.	$67.82	$67.39	$63.72	6.4

Business Statistics . . .

Indexes: 1947–49 = 100					
FRB Industrial Production	Nov.	130	130	130	.....
ENR Construction Cost	Dec.	134.9	134.8	128.2	5.2
BLS Cost-of-living	Nov.	114.6	114.5	115.0	− 0.3
NEMA Sales	Nov.				
insulation materials		124	117	130	− 4.6
electric appliances		90	102	70	28.6
household refrigerators		47	51	35	34.3
Wholesale prices	Nov.				
motors and generators		121.8	121.8	124.3	− 2.0
transformers and regulators		128.1	128.1	128.1	.....
switchgear and fuses		132.2	135.1	135.00	0.1
GNP—annual rate—$ billion	3rd qtr	355.5	356.0	367.2	− 3.2

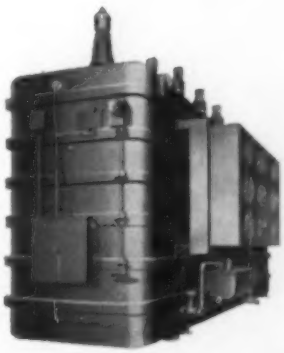


Moloney Transformers, proven dependable performers, provide an uninterrupted flow of power . . . up along your high voltage transmission lines . . . down to your lower voltage distribution feeders.

Moloney has paved the highway of high voltage and Kva power transformers in their newly completed manufacturing bay . . . and Moloney HiperCore Transformers have provided dependable avenues of distribution . . . with no detours.

Whether you need high road power transformers . . . or low road distribution transformers . . . make them "Moloney All Along the Line." For Moloney is the "Sign of Quality" . . . of 58 years of experience in the exclusive production of transformers.

MEEA-42



MOLONEY ELECTRIC COMPANY

Power Transformers • Distribution Transformers • Step Voltage Regulators • Regulating Transformers • Load Tap Changing Transformers • Load Center Transformers • Unit Substations • Network Transformers • Constant Current Transformers • Capacitors • Transformers For Electronics

SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

What to Do When LOADS GROW

Use a Vault-Type Power Unit to Replace 3 or 4 Separate Distribution Transformers On Pole or Platform

New vault-type power unit saves space, is exceptionally easy to install, reduces maintenance.

It combines three or four distribution core and coil assemblies in a single tank. Unit is so compact that it requires less than half the space needed for a conventional bank of three or four distribution transformers. Put it anywhere: the tank is completely welded and the unit can be operated continuously in locations which may become flooded. Find a spot inside — as was done in the installation shown at right — you can locate it in any corner.

Factory Assembly Simplifies Installation

Units consist of either three or four distribution transformer core and coil assemblies to supply three-phase power or three-phase power and single-phase lighting loads. Metering connections are simplified by mounting current transformers in the case. Potential transformers can also be mounted internally if desired. Assemblies are internally connected at the factory and leads are terminated at the cover. There is no primary or secondary bus work to be done at the point of installation. If a three-assembly unit is desired for present needs, room can be left for a fourth assembly to be added at a later date when requirements increase.

A-4499

500-Kva, Three-Phase Vault-Type Power Unit

The Allis-Chalmers vault-type power unit is the ideal answer to space or load growth problems for schools, hospitals, hotels, large apartment houses, shopping centers — anywhere loads grow fast. Get complete information from your nearby A-C office or write Allis-Chalmers, Milwaukee 1, Wis., for all the facts.

ALLIS-CHALMERS